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Rail-Road News.

Ground was broken on the Troy and Greenfield Railroad, at North Adams, Mass., on the 8th inst., and was the occasion of much rejoicing. Bells rung, cannon fired, and an address made by the Hon. George Grinnell, President of the Corporotion.

The first train of cars arrived at Portsmouth, Va., from Carrsville, on Tuesday last, and celebrated the trip by running over two mules—cutting one of them literally in two.

In Indiana 1,205 miles of railroad have been projected, and 212 have been completed.

Repairing Steam Boilers.

A judical investigation at New Orleans, in relation to the boilers of the steamer Knoxville, though not at all connected with the explosion of that boat, revealed some interesting facts. It appears that in February last, F. Coan & Co., of Algiers, brought suit against the owners of the Knoxville, for the sum of $360 for patching and repairing her boilers. The defendants answered that the express understanding and agreement with plaintiffs was, that they should make the boilers of said steamer tight and sound, and should receive no compensation unless they succeeded in doing so; that they wholly failed to fulfil said condition, and are entitled to nothing under their agreement. The court gave judgment against plaintiffs.

Camphor Balls for the Hands.

Cut small an ounce of spermaceti, an ounce of camphor, and one of white wax; put them into a couple of ounces of almond-oil, and melt them with a gentle degree of heat over a gentle fire. Pour the mixture into gallipots, and rub it on the hands or on any part of the skin which is roughened by the cold winds. This preparation is exceedingly pleasant, and very healing; to render it even more so, half a drachm of pulverized gum benzoin might be infused for some little time in the oil (which might be kept hot on a corner of the stove) before the ingredients are added. The mixture must then be strained through muslin before it is put in use.

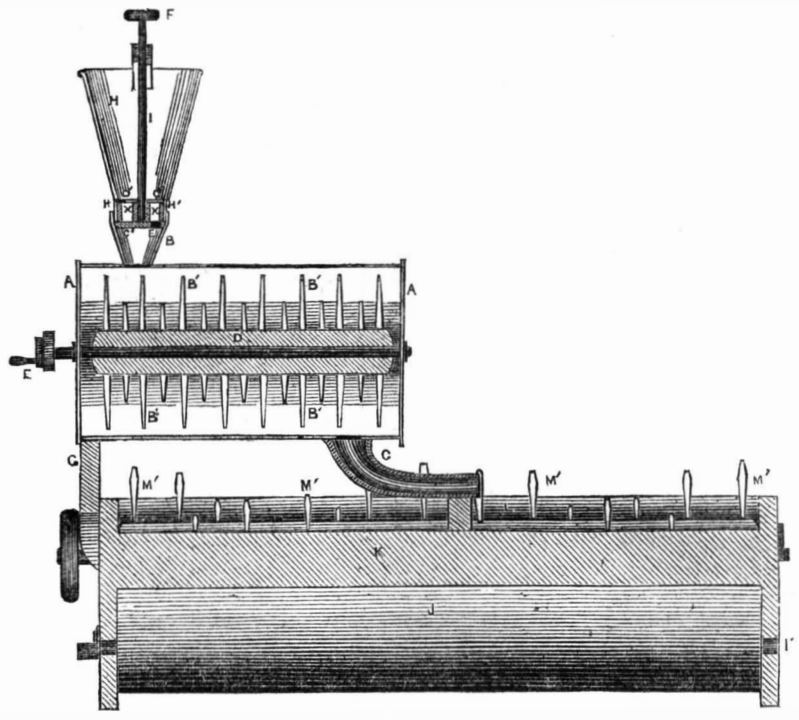
A Professor of Latin in the University of Edinburgh, now no more, having desired the students to give a list of their names in Latin, was greatly surprised on seeing written on a slip of paper the name "Joannes Ovum Novum;" which turned out to be the name of one John Egnew.

American Life Boats in England.

Some of Frances' Metallic Life Boats are being built in this city for the English Government. They are allowed to be superior to any other in the world. This is a feather in the cap of our inventors, and not the first.

Chief Justice Turney has been unanimously elected Chancellor of the Smithsonian Institute.

WRIGHT'S IMPROVED MASHING APPARATUS, FOR DISTILLING AND BREWING.---Figure 1.



This improvement is the invention of Mr. Joseph Wright, of Waterloo, Seneca Co., N. Y., who has taken measures to secure a patent for the same. The improvements relate to the mashing apparatus, and being very simple and good, the following description of the accompanying figures will render the same clear and understandingly to any person. Fig. 1 is a longitudinal section. Fig. 2 is an end elevation with the outer covers removed to exhibit the interior beaters. The same letters refer to like parts. The main part of the improvement relates to a small enclosed cylinder with quick revolving beaters inside, and a self regulating hopper to supply meal and hot water in proper propertions, and in small quantities to mash or mix the materials most thoroughly, and to let them pass out continually and regularly, with a large cooler with revolving stirrers.

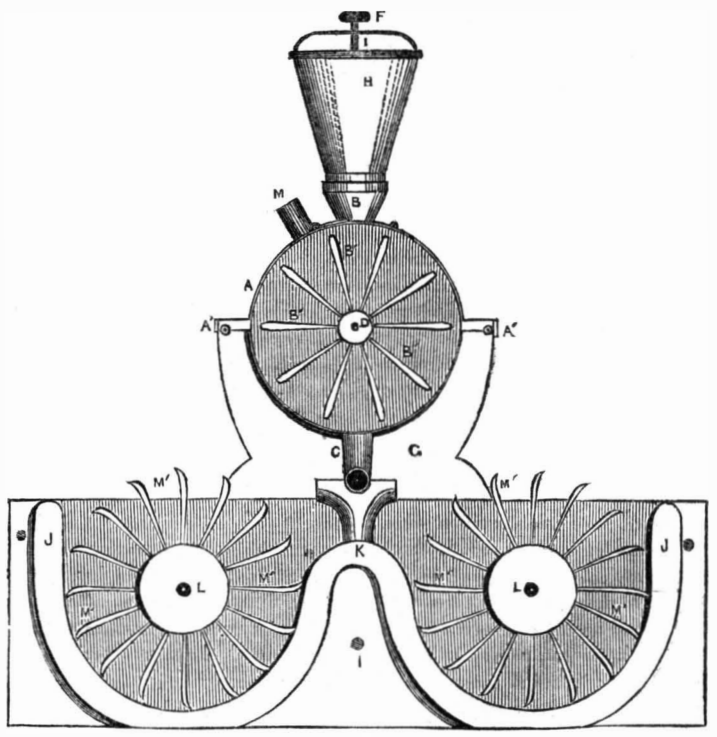
A is the stationary mashing cylinder; B is the feeding funnel; C is the outlet pipe of the cylinder, which may be set in any position; A' A' are bracing rods to support the cylinder; D, is the shaft of the revolving mashing mixers, B' B'. These beaters may be arranged in any suitable manner on the shaft. The cylinder may also have projecting beaters fixed inside for the revolving beaters to move between; E is a handle to drive the beaters, or a pulley, when steam or water power is applied; G is a bolster plate, for the cylinder to rest on; H is the hopper to feed in the grain or meal. It is fitted with two plates, C', situated a short distance apart at its bottom; it has radial openings, D' E, the one opening in the top plate, C', and the other in the bottom plate, C', (fig. 1). There is one, it may be said, on the right, and the other on the left hand of the hopper, H. I is an upright shaft, driven by a pulley, F; this shaft works through the plates, C' C', and has arms, X X, branching from it, bound by a ring clasp, H' H.' These arms are formed so as to constitute so many revolving cups or feed bowls into which the meal or grain passes from the hopper—through the opening, D', and is delivered into the funnel, B, from the said opening, D', through the lower opening, E, as the shaft, I, revolves. This is the way the grain materials are regularly fed into the cylinder. In fig. 2, M is a pipe for conducting hot water into the cylinder, A, to form the mash; J J is a large cooler, into which the mash runs from the cylinder through the pipe, C. It may be of any size, and have either one or two, as shown in figure 2. K is the bridge between the two coolers; L L are shafts extending from end to end of the coolers, and M' M' are curved arms on the shafts. Cold water may be admitted by the opening, I', or to circulate around the coolers in the channel, J J. The roller shafts, L L, can be driven by belt and pulley. There are outlets at the bottom of the coolers, to run off the mash when sufficiently cooled.

The shaft in the hopper to feed in the meal or grain, and the shaft in the mashing cylinder, A, are geared by belting to run in unison, to make the feed correspond exactly with the motion of the mixing beaters, B' B'. This is a very important and excellent arrangement. The supply of hot water can also be regulated. The meal or grain being mixed in small quantities in a closed cylinder, the mash is mixed thoroughly, the grain or meal being perfectly incorporated together, no lumps being found in the coolers. The water used may be of a lower temperature than that commonly employed. The grain or meal is uniformly scalded, as but a small quantity is operated on at one time, although this is done rapidly. Over-scalding some, and under-scalding other parts are obviated. The apparatus does not occupy much room for the work it performs. For the ordinary purposes of distillation, corn meal, with this apparatus, without the usual mixture of English or small grain, will be found to produce a great quantity of good spirits, as the mash is better mixed, scalded, &c. For brewing, the malt is operated like the meal for distilling. A good heat is just at the point of scalding—a point about 210°.

The cooling apparatus is a great improvement over those in common use. Two of the form represented, will cool as much as six of common kind, and the mash is all the better fer this, as it is soon delivered from exposure to the atmosphere. The inventor is a practical distiller. It will be observed that the bottoms and sides of the coolers are made of metal to expose a quick cooling surface.—These improvements are of the most valuable character, because they are economical in every light in which they may be viewed.

Mr. Wright has applied for letters patent. His improvements are in operation, giving the most perfect satisfaction. More information may be obtained by letters addressed to him at Waterloo.

Figure 2.



Probable Boon for Grumbling Shavers.

M. Boudet, a French chemist, in a communication to the "Journal de Pharmacie," gives the following formula for a depilatory:—"Take of sulphurite of sodium, or hydrosulphate of soda, chrystalized, 3 parts; quick lime, in powder, 10 do.; starch, 10; mix. This powder mixed with a little water, and applied over the skin, acts so rapidly as a depilatory, that if it be removed in a minute or two after its application by means of a wooden knife, the surface of the skin will be entirely deprived of hair. By this process the removal of the hair becomes so simple, rapid, and safe in operation, that it will probably supersede the use of the razor in many cases. It may be applied to parts the most delicate, as well as irregular, and to surfaces either limited or extended, and it is only after several days that the hair begins to re-appear."

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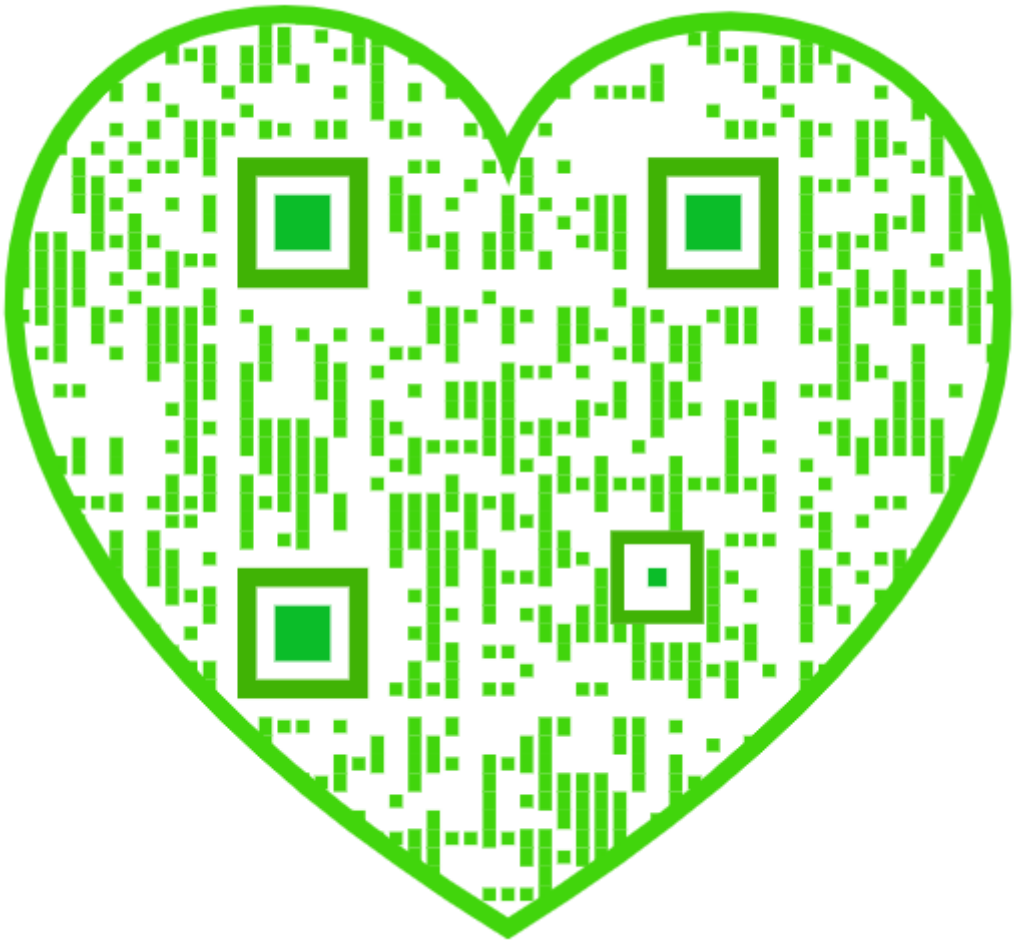

Miscellaneous.

Bills for Reforming the Patent Laws.

The Bills now before the Senate for reforming the Patent Laws, are creating a great sensation. None, we believe, are so well aware of the excitement as we are: we have received letters by the bushel, on the subject, and we have heard all the views of the different parties, and there are not a few of them. We have always taken an independent course, and advocated those measures which, to our minds, were based upon the true principles of justice, and which tended to secure the just rights of our inventors and people, for both have the same interests at stake in the Patent Laws. We have always spoken freely on the subject, and it made no matter who he or they were who proposed a good or a bad measure—be it an intimate acquaintance or a perfect stranger, we have freely spoken out to approve and disapprove. We know a great deal about the feelings and wants of inventors, and the feelings of community on the subject. From our experience, and not being entangled with any party alliances, and having no selfish personal interests in the matter, excepting (call it selfish, if you will, it matters not to us, we do not pretend to be disinterested patriots), justice to all, and a desire tc see the wisest and most politic laws enacted for the promotion of the useful arts; and we believe that we, at least, can throw some light on the subject.

We have four printed Bills now before us for reforming the Patent Laws. They all proceed from different sources, and from personally interested parties, and are not alike either in spirit or in the principles of their provisions. One Bill is that presented by the alleged Convention of Inventors, which met in Baltimore in 1848, and which was before the Senate last Session, and is now, but greatly curtailed and amended. We reviewed this Bill briefly last week. The second is that introduced by Senator Davis, reviewed by us last week, and which bears the impress of having been, in a measure at least, projected in the Patent Office. We have been informed that Examiner Fitzgerald, who, as it is stated, is an old acquaintance of Senator Davis, has had a hand in getting it up. And here let us say, that we have had a great many letters about Mr. Fitzgerald, but we have only published one. They all speak against him, but so far as we know anything of him personally, he may be one of the finest men in the world. The other two Bills are the productions of different and opposing parties in New York, one of which is a mere echo of the Bill now in Congress. Senator Turney, Chairman of the Committee on Patents, has copies of them all, and has received document upon document on the subject from interested parties.

Last week we briefly reviewed the amendment of Senator Davis. We spoke of an espionage clause, which was once introduced in a bill before, but which was stricken out. We gave no opinion on it last week, but now, having considered it, we believe that it never can and never should become a law.

In reforming any law or laws, the first question to be asked is, "what evil or evils have we to remove, and what new measures should we enact, which will be wise in their provisions, beneficial in their action, and conclusive in their results?"

We'l, then, first—what are the evils in the present Patent Laws, which the bills before us intend to remedy? We must say that the main points of reform are overlooked in the bills spoken of. We will present what we think would be a good Bill:—

AMENDMENT TO THE PATENT LAWS—Sec. 1st (substitute for sec. 7 of the Act of 1836): And be it enacted, that, on the filing of any such application, description, and specification, the payment of $30, the depositing of a model, or other article to exhibit the invention or discovery, the Commissioner will examine, or cause to be examined, as soon as possible, the alleged new invention, discovery, or design, and if, on examination, it shall appear that the applicant is the original and first inventor or discoverer of the improvements claimed in his specification, he shall order a patent forthwith, to issue to the said applicant; unless it shall appear that the said invention or discovery had been in use or for sale, with the consent of the applicant, for one year prior to the application for a patent, when, in such a case, no patent will be granted."

Reason for this amendment:—At the present moment the law allows two years of use or sale, if not abandoned to the public. Now, as it often happens that two or more men make inventions or discoveries about the same time, the first inventor may not apply for a patent for nearly two years, while the second or after inventor, may apply, at once and get a patent unknown to the first inventor. When the first inventor applies he is told that his claims are rejected because the other person has got a patent for the same thing. What then is to be done. Why he writes to the Examiner to declare an interference, and this is done. Evidence has to be taken by both parties before a Notary Public, or some proper legal person, and this evidence is sealed and transmitted to the Patent Office, and if it appears to the Commissioner that the second applicant invented his improvement before the other, why, he grants him a patent. And if the first patentee does not file evidence and oppose the grant of the patent to the second applicant, even although he may be a subsequent inventor, why a patent is granted, and thus two or three patents may be held by different persons for the same thing. We know of two or three who hold separate patents, granted within two years, for the self-same invention. We wish at least to lessen this evil, and save some labor in the Patent Office.]

Sec. 2—Be it further enacted, that if, upon examination, it shall appear that the applicant for a patent is not the original and first inventor of the invention or discovery claimed by him in his specification, that a patent had been granted to another for the same invention or discovery, or had been described in a printed publication, as the invention of another, the Commissioner shall notify the applicant that his petition for a patent is rejected, and he shall give his reasons for the said rejection, referring the petitioner correctly to the works where the invention is described, and briefly explaining the same, if in the English language; but if in a foreign language, he shall particularly describe the same. If, however, it shall appear to the Commissioner that one or more parts of the applicant's claim, or claims, is, or are, for a new and useful improvement, he shall point out the same to the applicant, requesting him to modify or strike out his other claim or claims, and make oath anew to his invention or discovery, and the patent will be granted. But if the applicant be not satisfied with the decision of the Commissioner, and persists in his claims, he may appeal from the decision of the Commissioner, and upon request in writing, have the decision of a board of examiners, to be composed of three disinterested persons, who shall be appointed for that purpose by the Secretary of State, one of them, at least, to be selected, if practicable and convenient, for his knowledge and skill in the particular art, manufacture, or branch of science to which the alleged invention appertains; who shall be under oath or affirmation for the faithful and impartial performance of the duty imposed upon them by said appointment. Said board shall be furnished with a certificate in writing, of the opinion and decision of the Commissioner, stating the particuler grounds of his objection, and the part or parts of the invention which he considers as not entitled to be patented, which must correspond with the reasons and references given to the applicant for his rejection. And the said board shall give reasonable notice to the applicant, as well as to the Commissioner, of the time and place of their meeting, that they may have an opportunity of furnishing them with such facts and evidences as they may deem necessary to a just decision; and it shall be the duty of the Commissioner to furnish to the board of examiners such information as he may possess relative to the matter under their consideration. And on an examination and consideration of the matter by such board, it shall be in their power, or a majority of them, to reverse the decision of the Commissioner, either in whole or in part; and their opinion being certified to the Commissioner, he shall be governed thereby in the further proceedings to be had on such application: *Provided, however*, That, before a board shall be instituted in any such case, the applicant shall pay to the credit of the Treasury the sum of $30; and each of said persons so appointed shall be entitled to receive for his services, in each case, a sum not exceeding ten dollars, to be determined and paid by the Commissioner out of any moneys in his hands, which shall be in full compensation to the persons who may be so appointed, for their examination and certificate, as aforesaid, and if the decision of the Commission be reversed, the applicant shall be paid back the $30 deposited by him in the Patent Office to try the appeal.

Sec. 3—Applicants for patents who are satisfied with the decision of the Commissioner, upon withdrawal of their claims, shall be entitled to receive back their models and $15 of their deposited patent fee; the models shall be sent back to any of the agents appointed by the Patent Office to transmit models to the Patent Office, according to the direction of the applicant. If no appeal is taken from the decision of the Commissioner within one year from the date of decision, all claim to a patent will be forfeited. All moneys returnable by the Patent Office to rejected applicants, may be returned upon certificate of the applicant, his attorney, heirs or assignees.

[Reasons for the enactment of these amendments:—The Patent Office, as now constituted, was really for the purpose, of preventing persons getting patents for things which had been invented by others—thus protecting those who had patents, and preventing any one from getting a patent title for a monopoly of that which was the public property of the people. It was also organized to assist applicants, by pointing out to them, clearly, what was old and what was new, so as to secure to the inventor whatever he had invented, be it small or large, if new and useful. The Patent Office only partially carries out these objects. The examinations are often not half performed, and decisions are recklessly made. Many applications are rejected, and, after some fugling, are granted. This is a common thing. The reasons for rejections, as given in the Commissioner's letters, are, in general, very curt, and too often unsatisfactory. There should be an easy mode of appeal: the above amendment for the mode of appeal is the same as was embraced in the Act of 1836;—it is a good plan, we believe. The return of the $30, if the applicant is successful, is founded upon the principles of justice: the law, as it now stands, makes the succesful person—him who has right upon his side, pay for the error of the Patent Office. The clause for the return of the rejected models will surely recommend itself; to carry out this provision, $5 is allowed to the Patent Office, out of the present return fee of $20; this will surely pay the extra expense and trouble to the Patent Office. We believe that the above amendments will cover the greatest defects now felt in the Patent Laws, in relation to applications for patents, proceedings in cases of rejections, and appeals.]

Sec. 4—And be it hereby enacted, that sections 11, 12, and 13, of the Act approved March 3, 1837, and section 7 of the act of 1836, be, and are hereby repealed.

[What we have set forth above relates altogether to the Patent Office and applicants. The next subject we must look to is protection of patent rights by just laws, and an economical way of protecting them. A poor man cannot defend a patent against the encroachments of a rich man. He cannot pay large retaining fees for able counsel, and without this he stands but a sorry chance of success. What reforms, then, are wanted?]

Sec. 5—Any patentee may apply at any time to any United States Circuit or District Court for an injunction to restrain any person or persons from infringing his patent in the District. He must set forth clearly in his petition the nature of the infringement, and make oath he verily believes the said person or persons are infringing the same—when the Court will summon the person or persons complained of to appear and show cause why the injunction should not be granted. At the earliest date possible, to render justice to both parties, a day shall be set apart for hearing evidence for the complainant and defendant, and the Court then, after hearing, may grant a provisionary injunction (if infringement is denied), or order the defendant to keep a regular account, and give bonds for the same, of the work done by the machine, or articles sold, or whatever the article or process may be that is complained of, and the Court shall then order a jury trial to determine the matter, finally, between the parties, at the earliest date, excepting both parties agree to refer the whole matter at issue to the arbitration of five persons—two chosen by each party, and the fifth by the four arbitrators, two of whom shall be experts—or the fifth by the Court, with the consent of both the interested parties. In such a case, the jury of arbitration, after being chosen, shall meet at the earliest convenience, and a verdict of a majority, shall be treated like the verdict of a common jury; and the Court shall award to said arbitrators such sum as may appear reasonable for their services in said cause, which amount shall be taxed as part of the costs.

[The provisionary clause is taken from Senator Davis's Bill. We shall take from all the bills, for they all have some good things in them, and shall continue the subject next week. We do not believe that much good would result from changing the appeals from the Commissioner to a new Court—from that of the Court of the Chief Justice of the District of Columbia, as is now the law. The section, as above constructed, is preferred by many inventors, but, personally, we like the law as it now stands. The amendment about improving the duties of the Patent Office, as we have constructed it, is a reform the most needful of any.

Teeth set on Edge.

All acid foods, drinks, medicines, and tooth washes and powders, are very injurious to the teeth. If a tooth is put in cider, vinegar, lemon juice, or tartaric acid, in a few hours the enamel will be completely destroyed, so that it can be removed by the finger nail as if it were chalk. Most have experienced what is commonly called teeth set on edge. The explanation of it is, the acid of the fruit that has been eaten has so far softened the enamel of the tooth that the least pressure is felt by the exceedingly small nerves which prevade the thin membrane which connects the enamel and the bony part of the tooth. Such an effect cannot be produced without injuring the enamel. True, it will become hard again, when the acid has been removed by the fluids of the mouth, just as an egg shell that has been softened in this way becomes hard again by being put in the water. When the effect of sour fruit on the teeth subsides, they feel as well as ever, but they are not as well. And the oftener it is repeated, the sooner the disastrous consequences will be manifested.

Steam Power in France.

The latest returns of the number of steam engines employed in France, in factories, steamers, and on railways, give the following results:—There are in France 5,607 establishments, of various kinds, at which steam engines are used. This machinery is worked by means of 9,288 boilers, of which 8,776 have been made in France. The whole represent 65,120 horse power. The number of boilers employed the preceding year was 8,023; the number of establishments at which steam engines were employed being then 4,033. The length of the railways now open in France is 2,171 kilometres (1,357 English miles), and the number of locomotives on them is 725, or 50 more than the preceding year. The number of steam vessels is 279, set in motion by machinery of 22,893 horse-power. The quantity of goods carried in them during the year was 730,948 tons, whilst that of the year before was 696,666 tons. It is calculated that the whole of the steam machinery now at work in France represents 110,178 horse-power.

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Woodworth Planing Machine.--Important Decision.

The Pittsburg Gazette, of the 16th Dec., contains the following account of an application for injunction, and the charge of Judge Grier. It contains a great deal of information with which every patentee should be acquainted :—

In the Circuit Court of the United States, the Western District of Pennsylvania, before Hon. Robert C. Grier and Thomas Irwin.

The case was one of several bills of Chancery, filed against owners of Planing Machines in the city of Pittsburg. The causes were conducted on part of Complainant by Messrs. Stanton and Shaler, and for Defendants by Dunlop and Loomis.

On a motion by complainant, for interlocutory injunctions in this and other cases, and by Defendants for issues to be tried by a jury, the Court delivered the following opinion :

Opinion of the Court—Grier, J.—There is no material difference in the several cases which have been argued together on the present motions.

The Complainant, Bloomer, claims as assignee of the patent granted to William Woodworth in Dec., 1828, under the extension of the same to his administrator by the act of Congress of the 26th of February, 1848. It is alleged in the Bills, and admitted in the answer, that the machines used by Defendants (the use of which is now sought to be enjoined) were made under licenses duly derived from the patentee or his assignees, previous to December, 1848. But it is contended that the purchasers of these machines, under the original patent, have no right to use them during the extension of the term of the patent since December 1849.

The Defendants have filed their answer denying the rights of the complainant, and averring that W. Woodworth was not the original inventor of the machine patented to him in 1828; and also that the patent of 1828 which was extended by the Act of 1845, has been surrendered and cancelled, and that the renewed patent taken out by the administrator of Woodworth is not for the same invention. In support of these allegations they have produced the deposition of a witness, who swears that he invented and put into operation the same machine, previous to the patent and invention of Woodworth; and have shown the record of a suit lately tried in the Circuit Court of the United States, for Maryland, before the Chief Justice, in which the Jury found "that the patent issued to the said Wm. Woodworth's Administrator, on the 8th day of July, 1845, is not for the same invention as the patent above mentioned, issued to W. Woodworth in 1828."

As a general rule, when equity of the Bill and the title of Complainant is denied unequivocally in the answer, an interlocutory injunction will not be granted, or affidavits heard to contradict the answer, unless in cases of waste, or where some irreparable damage might be inflicted before the final hearing.

I have said, on a former occasion, and still think, that it is time that the question as to the originality of this patent to Woodworth should be considered as settled, after 21 years of possession and successful litigation in almost every State of the Union. It is exceedingly vexatious, both to the patentee and the court, to be compelled to repeat a process which costs so much time, labor, and expense. Experience has shown that few patents have ever been issued in the United States for any invention, which witnesses of foreign or domestic origin cannot be found to impeach; but it has also shown that, however the discovery of such witnesses may fortify a defendant in swearing to the fact in his answer and denying the title of the patentee, they are usually found to be but broken reeds by those who lean upon them, in a contest before a jury, where their testimony is fully sifted and weighed.

If the present application for an injunction were resisted on this ground alone, under the special circumstances attending this patent, I should feel much disposed to grant it, notwithstanding the denial of the answer, and the affidavit supporting it

2d. But (besides a doubtful question of law, which I shall presently notice,) there is another question of fact, affecting the title of complainant in these cases, which has arisen lately and peculiarly affects the validity of this patent, as extended by the act of 1845. That act extended the patent granted to Woodworth in 1828, seven years from December 1849. This patent, thus extended, was afterwards surrendered by the Administrator of Woodworth, and a new patent taken out. The defendants swear, in their answer, that this renewed patent (on which the bill is founded) is not for the same invention which was contained in the original of 1828, and contend that complainant cannot claim under a surrendered and cancelled patent—nor upon the new one unless it be for the same invention, which, after a full and fair trial, it has lately been decided not to be. In answer to this objection, it is stated that the Supreme Court have decided this question in the case of Wilson vs. Rosseau, (4 Howard, 688.) But this appears to be a mistake; the Court in that case decided only that the renewed patent was not void for uncertainty, ambiguity, or multiplicity of claim, as question of law on the face of the patent. Whether it was for the same invention is a question of fact, which could not be and was not submitted to them, by the certificate of division of opinion from the Circuit Court.

3d. There is a question of law, also, with regard to the complainants' right to these injunctions, the decision of which I am not prepared to anticipate, before the final hearing of the case. Notwithstanding the authority produced, my mind is not yet clear from doubt as to the construction of this Act of Congress of 1845, extending the patent of Woodworth. If an inventor, in the enjoyment of his monopoly, sells to me his machine, it is mine absolutely in full property, with a right to use and enjoy it for all future time, at least such is the supposition and belief of every person who buys an article from its owner, whether it be patented or not. I can well believe that Congress might extend the term of his patent, to a meritorious inventor, that he may continue to have the profits of the monopoly of making and vending the patented articles, without intending to destroy those he has already sold. The former may be a just and proper exercise of the power of Congress; the latter a tyrannical abuse of it, such as should never be imputed to the legislature, unless expressed in positive and express language. and so far as this question has been passed upon by the Supreme Court such appears to be their opinion also.

In this case of Rosseau vs. Wilson, already cited, Mr. Justice Nelson (who delivered the opinion of the Court), in speaking of the 8th Section of the Act of 1836, which authorized the extension of a patent for seven years, says: 'By the report of the Commissioner of patents, it appears that 500 patents, issued in the year 1844, for the fourteen last years, the average issue, yearly, exceeded this number, and embraced articles to be found in use in every department of labor or art, on the farm, in the workshop and factory. These articles have been purchased from the patentee and gone into common use. But if the construction against which we contend should prevail, the moment the patent of either article is renewed, the common use is arrested by the exclusive grant to the patentee. A construction, leading to such consequences, and fraught with such unmixed evil, we must be satisfied was never contemplated by Congress, and should not be adopted unless completed by the most express and positive language of the statute."

That Congress intended, in the present case, to confer on the patentee any greater favor than was conferred by the extension under the act of 1836, does not directly appear. If the construction contended for by Complainant be correct, he can call upon this Court to send the Marshal and break the machines to pieces, which have been purchased from the patentee or his assigns. To injoin the use of them amounts to much the same thing. There is certainly "no express and positive language in the statute," conferring a right of such doubtful justice on the patentee.

In such a case, I am not disposed, (on a mere interlocutory motion and before the parties have had a full and final hearing,) to exercise the high and dangerous power (if exercised indiscreetly) of issuing an injunction, which will put the defendants and their business entirely at the mercy of Plaintiff, without the chance of a fair and full trial.

They do not stand before the Court in the attitudes of pirates of complainant's invention, but rather as resisting what they believe to be an oppressive construction of an act of Congress, and one never contemplated by it.—They are amply able to pay any damages which may be assessed, in case of a recovery against them—and the Complainants may have an order on them to keep an account,—but the injunctions are refused.

As to ordering the issues requested by the defendants, we would remark that the fact that these machines were purchased from the patentee by the defendants, works no estople, either in law or equity, to their denial of the originality of the invention, under the circumstances of the case. They have a right to be heard, on the defence set up and sworn to in their answers. Whether it should be tried by the court, or an issue sent to a jury, depends on the nature of the case. The questions of originality and identity are questions of fact, and the testimony will, as usual, be conflicting and contradictory.

Such questions are best tried by a jury, with the witnesses before them in person. Issues are therefore ordered to be tried at the next May Term.

The record of the case of Wilson, *et al*, vs. Brown, in the Circuit Court of the United States for Maryland, affords an excellent precedent for the form in which the order should be made, and which the clerk (with the assistance of the counsel,) is directed to follow.

Irwin, J.—Without assenting, at this time, to the reasons and inferences contained in the points marked 2 and 3, in the above opinion, I concur in refusing the injunctions, and directing the issues.

To Make Textile Fabrics Water-Proof.

PHILADELPHIA, Dec. 30, 1850.

MESSRS. EDITORS.—In No. 15, Vol. 6, of your paper appears a paragraph headed "New Water-Proof Discovery," descriptive of a discovery made by a Mr. Martin, of Cockermouth, England, which certainly is one of the greatest of the age. The purport of this epistle is to inform you that the procees of rendering cotton, silken, and woollen cloths perfectly impervious to moisture (yet at the same time allowing perspiration, or the breath, to pass freely through any fabric so acted upon), was practiced by me in Yorkshire, England, several years ago, and also by those to whom the composition, *en masse*, was sold, and it is very likely that said Mr. Martin has got at some portion of the receipt through one of the workmen then employed, who migrated to Cockermouth—part of the said receipt being known to the foreman.

I left England in April last, for this city, where I intended establishing the water-proofing business—but on my arrival here I met with an opportunity of employing my time and capital in another direction, consequently, it has not been made known to the public.

On reading your announcement I at once set about preparing some cloth, and I took a lady's thin woollen scarf, of fine quality, having all variety of colors on it—such as scarlet, blue, black, green, and white—and having undergone the operation, which took half an hour, I took the kettle containing boiling water, heated to 200° Fahr, from off the fire, and in the presence of witnesses, poured one pint therefrom upon the scarf, which was held by two individuals, which, to their surprise, had not the least effect upon the fabric—the hot water rolling to and fro as so much quicksilver, or as water on a duck's back, or cabbage leaf. The water remained sixteen hours in the hollow of the scarf, placed over two chair backs; but being wanted by the lady, she poured off the once hot water, enveloped herself in her water-proof scarf—thanking me for my kindness.

I could exhibit samples or patterns, if necessary, which would convince the most skeptical. W. W. BRIGG.

[Mr. Brigg is ready to sell his process of rendering goods water-proof.

Whirlpools and Whirlwinds.

If, in the bottom of a pond or other reservoir of water, there be an aperture through which the fluid is allowed to flow, there will be formed, immediately above the outlet, a whirling vortex, which is called a "whirlpool." It is formed by the currents from opposite directions meeting each other at the aperture; the meeting of these currents gives rise to a circular motion, which extends to some distance; this motion imparts to the water a centrifugal force, by which it is thrown from the centre, leaving a funnel-shaped hole from the surface to the outlet. The Mælstrom, a large whirlpool in the ocean off the coast of Norway, has a vortex sufficient to swallow up the largest ships.

Precisely analogous to the whirlpool is the "whirlwind;" the heated air at any portion of the earth's surface being caused to rise by the pressure of the surrounding colder and heavier air, the meeting currents produce a whirlwind. Whirlwinds are also frequently produced by contrary winds. The partial vacuum, caused by the ascending whirl, is commonly filled with dust, leaves, straws, and other light bodies, which it takes up in its course; it is sometimes sufficiently powerful to uproot trees and unroof houses. If the current of air from any particular quarter be of greater force than the other, the whirlwind then acquires a progressive as well as rotary motion.

H. W. H.

Medical Gleanings in Naples.

The Neapolitans entertain an opinion that bloodletting is inculcated in many diseases in which, among us, it would be thought fatal. Bleeding is a distinct profession, and in narrow lanes it is quite common to find painted signs, representing a nude man, tapped at several points—a stream of blood flowing from the arm, the neck, and foot, all at the same moment. In the spring, every body is supposed to require bleeding, just as, in some parts of New England, whole neighborhoods at that season take physic. Horses, too, are here bled unmercifully. A few days since, a poor, over-worked creature was standing in the middle of the street, his blood flowing out with frightful rapidity. He required food, instead of such cruel depletion. Consumption is considered infectious; consequently, on the death of a person from pulmonary disease, his cloths are burned, and the apartment at once thoroughly purified. An instance was related by a high public functionary, the other day, of a family being warned to vacate their hired premises forthwith, because a member of the family gave indications of approaching pulmonary consumption. Nowhere are the dead more magnificently exhibited at a funeral, or more quickly disposed of when the ceremonies are finished. One coffin answers for thousands, to all appearance. It is of rough, white boards—lodged temporarily, while in church, in a rich sarcophagus, covered by a rich wrought pall, made heavy by gold lace and fringes. When the candles are extinguished the friends retire, and the coffin being taken out, is carried on the heads of rough-looking fellows to a closet. Afterwards, if conveyed to the Santo Campe, the corpse is taken out of the coffin, and laid on a shelf in a tomb and the empty box brought back for another. Some of the funeral processions in Naples, Rome, and Florence, are very extraordinary performances—the persons following are all masked, having eye holes to see through while bystanders are prevented from recognising any of them. At Florence the burials are by night.—[Boston Medical Journal.

Marion County, Virginia, is so healthy that the Fairmont Banner cannot obtain a single death to publish. A man whom the editor thought to be dead, appeared to him on horseback as he was writing his obituary.

The cleansing of the streets of New York cost $160,000 last year. A fine sum indeed for such dirty streets.

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New Inventions.

Extension of Patents Applied for.

J. A. Pitts, of Springfield, Ohio, and H. A. Pitts, of Alton, Illinois, have petitioned the Commissioner of Patents for an extension of a patent granted to them on the 29th June 1837, for improvements on machinery for threshing and cleaning grain, which expires on the 29th of next June. The petition will be heard at the Patent Office, on Monday the third of next March, at 12 M. All persons are notified to appear and show cause why the said patent should not be extended.

All extensions are for seven years. The Commissioner has the power of granting the extension. Those opposing extensions can also file their objections in writing in the Patent Office. The objections thus sent on must be filed 20 days before the day of hearing. All testimony thus filed must be taken according to the legal rules of the Patent Office.

Advertising notices of applications for inventions are published in the Washington Republic, New York Tribune, and some other papers. We intend to publish all such notices for the future, not charging the government nor Patent Office for the same. Such favors are awarded only to political papers, not because they are vehicles to carry out the objects of the Patent Law, but to fulfil the old maxim of Gov. Marcy—"to the victors belong the spoils." One hundred times more inventors read the Scientific American, who are interested in such things, than all of the papers in which the advertisements are published.

Electric Clock.

M. Peyrott, of St. Etienne, has arranged an electrical clock, after, we believe, an American invention, which, at small expense, and by means of communicating wires, will indicate the same moment upon a myriad of clock-faces. In this manner, one clock will serve a whole city, and the inhabitants may take Time into their houses, and pay by the month as we do for gas and water. What a vista of pleasant possibilities this discovery opens! No more inaccuracy in dinner arrivals—no more being caught at home, by difference in clocks, at hours arranged for friends or creditors to call. —[Exchange.

[The Electric Clock is now ten years old, and is the invention of Bain.

Machine for Splitting Rattans.

Mr. Joseph Sawyer, of Royalston, Mass., has invented and taken measures to secure a patent for a very useful improvement in machinery for splitting rattans, which are exceedingly useful for many purposes. The rattans are fed into two chisels by a set of grooved horizontal rollers, and they are held to the action of the chisels by two movable vertical rollers. The strips that are cut off, fly out in one direction and the larger part of the rattan by another. Thick or thin stripes can be cut at the will of the operator. It is a good improvement.

Machine for Making Umbrella Ornamental Han es, &c.

Messrs. West & Plumb, of Honesdale, Pa., have invented a very beautiful and simple machine for making ornamental umbrella handles canes, &c. We have seen this machine, and some of the work performed by it, and we must say that this is a good improvement. Waved and circular smooth elevated windings are produced on the handles: this is done by a peculiar die, which acts upon the handle by pressure, while it (the handle) receives both a rotary and reciprocating motion at the same time.

A German manufacturer, represented by an agent in London, is constructing a musical bed for the exhibition of 1851. Directly the occupant of this bed presses it, soothing airs will be emitted; and thus lulled, he may luxuriously fall into the arms of sleep.

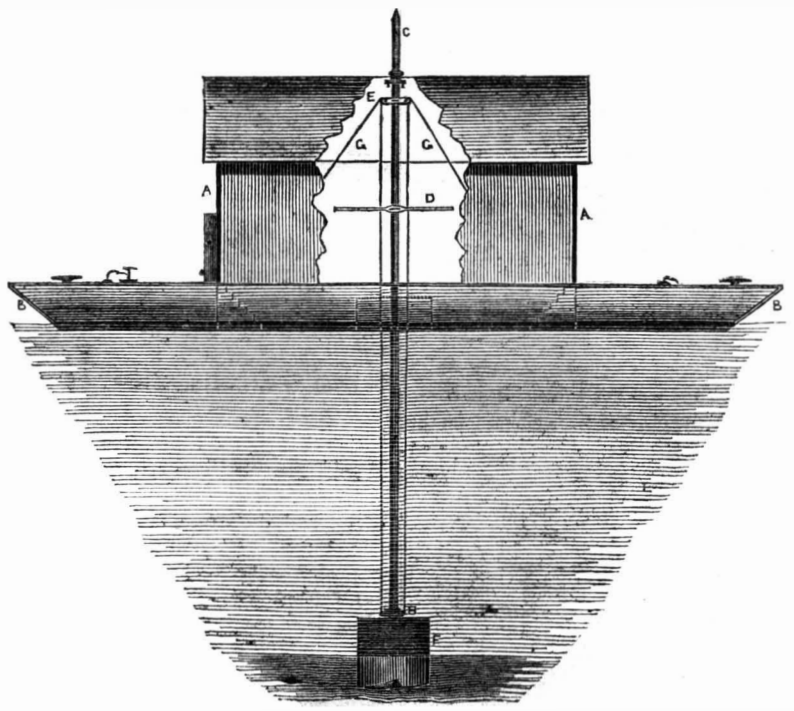
A pair of compasses, said to be undoubtedly Roman, but resembling in every respect the modern instrument, have been found among the Roman remains lately discovered at Cirencester, Eng.

Inventors.

Inventors are, generally, poor hands at profitably using or disposing of their inventions. There is little use of inventors appealing to the public press, or men of science, for opinions favorable to their works, hoping thereby to make them go practically with the public. Every inventor should have a "good angel" in the shape of a ready, practical business man, to push his invention into the world. In this way only are inventions rendered profitable and known. Our friends of the Scientific American, whoprobably know something—they ought to—ofthe history of inventors and inventions, will, we doubt not, bear witness to what we have said. Genius creates, but it takes talent and tact to apply—to render useful and profitable.—[New Yorker.

[The above is nearly correct. Inventors although they may not have much of the world's goods, can still do a great deal by advertising. Without advertising now-a-days, very little indeed can be done.

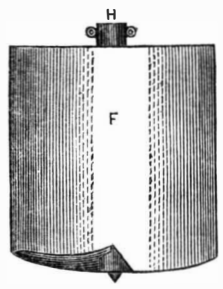
GOLD BORING EXCAVATOR.---Figure 1.



This machine is the invention of Mr. James Reynolds, No. 268 Broome St., New York City. Its object is to raise gold deposits in streams and rivers by a very simple and excellent combination and arrangement of machinery, which cannot fail to awaken considerable interst respecting its merits.

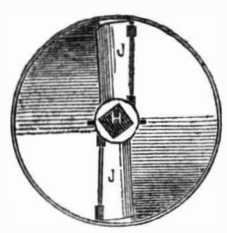
Fig. 1 is an elevation showing the apparatus in operation; fig. 2 is a side view of the borer; and fig 3 is a plan view of it, (looking down.) The same letters refer to like parts. B B represents a scow seated on the water; it may be kept firmly in its situation by pointed stakes driven down at each corner. The water is shown, and the borer in operation. A small house, A A, is built on the scow for the gold diggers and washers, to live in. The borer consists of a metal cylinder, F, having its bottom cast partly solid with a socket tube, H, in the centre to receive a shaft C. This

Fig. 2.



borer is peculiarly constructed. It is divided into two bottom sections, which have a projecting lip, each, like an augur's; these two lips project below the bottom. There are two openings into the borer cylinder through the bottom; these are covered with hinge valves, J J, which open upwards to let deposites rise up into the cylinder, F, of the borer, but will prevent them from falling back. These valves are not flat and horizontal, for in that case, they would not fall back fast enough to close the openings when the cylinder was lifted up, but they are hung upon their axes nearly vertical. The lips below, and their form are something of a screw or turbine form, so that the valves fall plumb, yet the lips are inclined outwards and downwards below them. The cylinder of the borer is intended to be heavy enough to sink by its own gravity into the mud. D is a lever on the shaft, C, for the men to turn the said shaft. When they do this, the cylinder, F, moves round, and the augur lips below, acting like a screw, raise the deposits into the cylinder; and when it is full, by a rope, G G, passing over fixed pulleys, E, and down into eyes on the centre socket of the cylinder, the cylinder, with its contents, can be elevated carefully and rapidly with its precious load. The deposits can be washed by others on board of the scow in any of the known ways. This borer is certainly a novel plan for elevating the deposits, and no doubt it is a most excellent plan for some situations. Instead of having to turn aside rivers and streams, to lay bare their water courses, this apparatus can be used so as to save all such labor—a labor the most arduous, and oftentimes performed without any remuneration whatever. This machine can be used to tap, as it were, certain situations, before commencing operations, so that labor may not be spent in vain. It can be worked in all kinds of weather, and during all hours, night and day.

Fig. 3.



More information may be obtained about it from Mr. Reynolds, who has taken measures to secure a patent.

Pony Sleigh for the World's Fair.

Messrs. Jas. Goold & Co., of Albany, have built a pony sleigh of magnificent workmanship for exhibition at the World's Fair. The cushions are of crimson velvet, with satin borders. The body of the sleigh is crimson, highly polished, and the ornamental painting is very beautiful. It will be a creditable specimen of American skill in this important branch of mechanism.

Scientific Examination of the Florida Coast.

Professor Agassiz is about to proceed to the South, intending to devote some time, in company with the officers of the Coast Survey, to a scientific examination of the Coast of Florida, with a particular view to the coal formations in that region.

The Gases of Water.

That Mr. H. M. Paine has effected an admirable modification of the ordinary magneto-electric apparatus, by which, without proportionate increase of motive power or dimensions of any part, may be generated or rendered active an amazing quantity of electricity, is incontrovertibly true. And it is probably true, also, that, by peculiar adjustment of electrodes, Mr. Paine is enabled to decompose water with great rapidity, and liberate, at will, either hydrogen alone, or oxygen alone; but that this truly surprising effect proves, by itself, that what we term oxygen and hydrogen, are but two dissimilar electric or molecular conditions of *one* element, may not be admitted until the averment shall have been substantiated by accurate analytic experiment.

It may be asked—what becomes of the oxygen, when hydrogen alone is evolved? May it not remain in combination with water to the formation of peroxide of hydrogen? (or, properly, binoxide, since, for the present, we are to consider that ozone is the peroxide.) And when oxygen alone is eliminated, is it not more credible that the partially decomposed water becomes a sub-oxide of hydrogen (a hitherto undiscovered compound), than that, for more than two-thirds of a century, profoundly erudite philosophers in the most exact of sciences, have universally mis-read the primary character of their alphabet?

And lastly, and with less probability, may not the gases, which are furnished by this electrolytic action, be truly gaseous water in such isomeric condition that (in accordance with its electric attributes) it exhibits the respective properties of either hydrogen alone, or oxygen only? Indeed, Mr. Paine himself has said that the hydrogen produced by his arrangement of apparatus, differs from ordinary hydrogen in certain respects. Of these points of difference, one I presume to be, that it is perhaps more readily and effectually catalyzed by transmission through oil of turpentine and other camphenes, than ordinary hydrogen, which may not possess, in so great a degree, the quality of undergoing isomeric change by chemical inductive influence.

Something further, in this connection, may be said hereafter, when there shall have been developed data more tangible, on which to base our speculations. HERMES.

[We would state, as answer to the above, and some other articles which we have noticed in various papers, that Mr. Paine states that "he knows water to be a *simple*, or, in other words, can be resolved wholly into hydrogen gas."

We have a letter now before us from Mr. Paine, wherein he states that he can give the names of scientific men, who have resolved all the water into hydrogen by a common Grove battery.

In all the accounts which have been published we have seen none that touches definitely upon the productive effect of Mr. Paine's machine: here it is as stated in his letter to us:—

"With a magnet whose legs are 12 inches long, and 2½ wide, with a weight of 64 pounds falling 3 feet in one hour, as a motor, I evolve 100 cubic feet per hour—more could be obtained, but not without danger."

In a short time Mr. Paine will furnish us diagrams and a full description—he has now gone to the South for a brief period.

Mr. Paine has published a challenge in the "Boston Commonwealth," to resolve water entirely into hydrogen without completing the electric current, with the use of any battery and electrodes his opponent may chose. The challenge is for $5,000 to be given to some charitable institution. This challenge has been accepted. Here are the conditions:—

"I stipulate, according to the terms of his proposition, that the electric circle is not to be complete—that there shall be no possible connection between the poles of the battery, either by metallic, fluid, or any other electric conductor; also, that there shall be no oxygen generated, in a free or combined state; and, further, that Mr. Paine shall show to the satisfaction of the supervising committee that he purposes, that but one current of electricity passes through the fluid, by the agency of which hydrogen alone is disengaged."

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Scientific American

NEW YORK, JANUARY 18, 1851.

The Future---Industry.

A prudential preparation, and a far-reaching sagacity to anticipate something of the future, are evidences of superior mental endowments, and a superior civilization. The barbarian cares only for the present—he revels in the dance or the feast of momentary enjoyment, heedless of those provisions for the future which distinguish the civilized man. The wise man derives lessons from every event he witnesses, and treasures up the experience of the past to guide him for the future; he remembers the teaching of the wisest and most experienced of mental philosophers—the son of Israel's Shepherd King, and he does not forget how the sluggard is commended to "go to the ant, consider her ways, and be wise: for she provideth her meat in summer, and gathereth her food in harvest."

Last week, while taking a brief survey of the progress of science and discovery during the past fifty years, we were particularly struck with the accumulated number of discoveries which have rewarded unremitting application and industry, and which have conferred honor on many low-born names. Many discoveries have been made, apparently by accident, but, as a general thing, we find they were made by men of observing and reflective minds, and who were prosecuting researches with some distinctive object in view. It has often happened, that men who have studied and labored unsuccessfully in the search of a certain object, have been rewarded with quite a different but more important one, than that for which they had so long struggled and studied. This was the case with Newton and the apple, and the grand discovery of the metal, potassium, by Davy.

We instance these cases, and have chosen this subject, to give a word of advice to our young men especially. Industry is sure to have its reward sooner or later, and young men who, in the common course of providence, have a good future before them, should never forget this. Let your attention and labors be rightly and well directly. James Watt had labored much and studied long before he was rewarded; but the reward came at last. Sitting in deep reflection upon his favorite subject—the steam engine—the invention of the grand improvement, viz., the separate condenser, beamed upon his mind like a flash of lightning,—hundreds of others have been rewarded in the same way. "He that trifleth with time layeth up for himself rags and sorrow." In our long winter evenings, our young men should endeavor to spend the hours at their disposal to some useful purpose. Innocent amusements are good in their place—we like to see young people enjoying themselves; but oh, how many triflers of time do we see every week, and how much time we see wasted every day, which, if well spent, would cause future consolation and enjoyment,—whereas we can expect to see no reward reaped by those who are so unwise, but that of regret, and, it may be, poverty. Almost every person has cause to regret misspent time.

Let every one who reads this determine to employ his future moments better than the past. At the opening of a new year it is a good time to commence life anew. Good purposes are good things, for no man, without a good purpose, ever pursues good objects. The advice given will apply to men in every condition of life, and in every calling and profession. Lay out a right-good path for the future, and "whatsoever thy hand findeth to do, do it with all thy might."

A New Locomotive for Cuba.

Messrs. Norris and Brother, of Philadelphia, have just finished another of their large class of locomotives for one of the railroads in Cuba. We see that the fine locomotive works of Norris, in Schenectady, N. Y., are to be let.

New Aerial Propeller.

An inventor named Tough has invented a new Aerial Propeller; it is a remarkably *tough* subject.

More about Agricultural Chemistry.

A society in Scotland has been testing different manures in the production of turnips, which must be of interest to a great number of our readers. There were fifteen fair experiments made, but those of the greatest importance were between manure kept under roof and manure exposed to the weather. We will refer only to these two, but stating that from seven tons of Peruvian guano, 25 tons 8 cwt. of turnips were produced on the acre. This was the largest produce of the fifteen experiments. Forty loads to the acre of uncovered kept manure, and 40 loads kept under cover, gave the following resuls:—that kept under cover produced 20 tons 16 cwt. per acre, that from the uncovered produced 20 tons 8 cwt.—a very small difference indeed. As two-thirds of our people are engaged in agricultural pursuits, this subject is of great importance to them, and we cannot do better than publish that part of the report of the Club mentioned (St. Quivox Farming Club):

"The chief feature of interest involved in these experiments is the comparison between the crops grown on farm manure kept under a roof, and those on dung kept in the usual manner. It is an important contribution towards a solution of the question—whether it is profitable to roof over manure heaps at farm steadings? It is needless to expect that this point will be settled in the laboratory of the chemist. As in many other things, the farmer must, in all likelihood, find out the way for himself, and the chemist will afterwards tell him why his practice is correct. At a recent agricultural meeting, Prof. Way, when asked if the advantages gained by covering a manure heap were worth the expense, replied that the question was an unfair one, as he could not be supposed to know what the expense would be; but, as a principle, he would say by all means cover it over, and if they must dilute their heap, dilute it when they wished, and not let the heavens do it for them. Even if mixed with soil, he wished to say that it would do better to cover it. It may as well be said, however, that if the heap must be diluted in order to keep it in a cool condition, it can in no way be so cheaply done as by rains; and if these should wash out a portion of the soluble fertilizing matter, a good tank can be constructed to receive it at far less expense than a large roof; and besides, we have here a fact, and one fact is said to be worth a number of theories, that the manure kept in the open air was as valuable for the growth of turnips, as that kept under a roof. The quality may be a little lessened by exposure; but what remains appears to be weight for weight of equal quality. Nor is it likely to lose much if mixed with soil containing a considerable portion of alumina. Professor Way has himself shown, by his admirable discoveries, that such soils possess the power of absorbing and retaining the fertilizing properties of manure in so effectual a manner, that no amount of rain will wash them out. With this knowledge, it is difficult to discover what great good can result from roofing over a heap of dung mixed with earth. In these times it will not do for farmers to undertake expensive works which may be of doubtful utillty; and it is therefore satisfactory to find that some progress has been made in the accumulation of data, from which a correct judgement may be formed. A few more of careful, conducted experiments, to confirm or disprove those of our respected President, will be the simplest way of setting the matter at rest; for, with all deference to those who guide us to principles, it is facts from the field which will most readily influence practical men, at least so long as the knowledge of these guides is so incomplete that their deductionss are frequently found not to be trustworthy."

A new theory, we see, of enriching waste lands, is brought forward by a Mr. Baldwin, of Virginia, in the "Plow, Loom, and Anvil." It is simply to cover or shade the waste lands—prevent its exposure to the sun. Heavy manuring is a more reasonable method, for sure and quick results; and, after all, we must say that the report above is inconclusive. Let five tons of manure be set aside, under roof, for 6 months, and 5 exposed to the weather, and then test them fairly. Turnips are a good test crop.

Meeting about New York Gas.

A meeting was held at the Chinese Rooms, on Wednesday evening last week, the object of which was, to advocate a Gas Reform and approve the veto of Ex-Mayor Woodhull.—Speeches were made by C. E. Lester, Horace Greeley, a Mr. Camp, a Mr. Price, and others. Mr. Camp stated that he had a gas made out of refuse materials, which was purer, and could be made for one half less than the kind made from coal by the New York gas companies. Mr. Lester and Mr. Greeley spoke about the discoveries and improvements which had been made, were making, and are to be made, which left coal gas far behind the progress of the age. We must say that all this wants confirmation. Very little improvements have been made in the manufacture of coal gas for twenty-one years. Where cannel coal is cheap and where the coke can be sold for a reasonable profit, no gas has been able to compete with that of coal. We hope the cannel coal of Virginia will be able to be brought to New York and sold cheaply. In some English cities every working man burns gas in his house, and the cost per annum is not to him one-fourth of what oil, camphene, or candles cost us here, and certainly one-third the price of our gas. The gas companies' contract will run out in two years, and then the lighting of the city should be left to open competition. Let the Common Council now make open proposals for a contract, to go into operation when the present contract expires. That will bring out the pith of those who propose to supply us with cheap gas. Let there be fair competition in this thing; let every thing be done openly and above board. We would like to see gas produced so cheap that it would be introduced and used in all private houses. This, we believe, could be done by a strong, wise, and spirited gas company; for, if it has been done in other quarters of the world, it surely can be in New York.

Drawing in Academies and Colleges.

We have received a letter from a correspondent, stating that Mechanical Drawing is taught, Minifie's work being the class book, in Norwich University, Vt. We have also received a catalogue from our correspondent (J. B. T. Mead, Cadet, N. U.), and we are well pleased with the course of instruction. The term opened on the 3rd inst. Candidates who do not pursue the regular college course are admitted to the scientific course, and are required to sustain a satisfactory examination in English grammar, geography, and algebra through equations of the first degree. To young mechanics we say, by all means save all the money you can, and give yourselves the best education possible. Is there one man living who does not regret misspent time and money of youthful days? Without a good education, no man becomes distinguished. Oh, how many men, now ignorant, might have been educated had they only saved up a few cents every week when they were young. It is indeed true that the majority of men appear not to have the right stamina for studying a subject that requires severe reflection; but it is also true, that a taste for dry study can be cultivated, and a faculty for it can be easily destroyed. To young men we say, learn—learn when you are young, and apply your wisdom when you grow up into manhood and old age.

Sash-Bar Grooving Machine and old Gen. Bentham.

The British papers have lately been boasting of an invention made by Mr. Paxton, the architect and designer of the Great Glass Palace, for grooving sash-bars, for which he received a medal from the Society of Arts, in 1841. This has called out a correspondent of the London Mechanics' Magazine to the defence of the ingenious Sir Samuel Bentham, the original inventor of planing machines, a subject in which a great number of our readers are interested. The patent of Sir Samuel, 28th April, 1793, reads thus, "besides the general operations of planing, rebating, morticing, sawing in curved, winding, and transverse directions," he invented an apparatus "for preparing all parts of highly finished window-sash." In 1797 Bentham proposed and introduced steam power into the Portsmouth Royal Dock Yard, and new machinery for working in wood, which he described in a letter to the Navy Board as follows:

"1st. By means of reciprocating motion."

"Sawing in general; particularly straight work—such as sliding timber, slitting deals, cutting, quartering, and straight planks of all kinds."

In the margin of a certified copy of this letter is written, "All introduced except sliding timber."

To return to the proposal.

"2ndly. By means of rotary motion."

"Edging, tongueing, grooving, rebating and cross-cutting into lengths, deals of all sorts for joiners and house carpenters' work."

Against this article is written in the margin, perhaps as late as 1813, "Long since introduced with great success."

Then follows in the proposal,

"Tongueing and grooving piles for damwork."

"Converting slabs and offal timber into treenails."

This was also executed, so that slab and offal theretofore sold mostly for fire-wood, was by means of his machinery made available for the fabrication of various articles of secondary importance.

To the above particulars, Sir Samuel added, "These, amongst various other instances, have occurred to me as giving occasion in his Majesty's dockyards for the substitution of the invariable accuracy of machinery, to the uncertain dexterity of more expensive manual labor."

By sir Samuel's machinery junctures were as accurately cut as any other parts—even dovetails, mortices, and tenons.

The original of this letter, 1797, doubtless is amongst the records at the Admiralty; there is a copy of it in the books of the Inspector-General's-office, and a certified copy exists in private hands.

New York Streets---Mud.

We can boast of a great many things, such as the largest city, the greatest amount of shipping, steamboats, &c., but all these are nothing to brag of in comparison with our muddy streets. There are gulfs in the Catskill Mountains, but what are they in comparison with the gulfs in some of our intersecting streets. A horse and cart almost disappear in the puddles, and donkeys would never come out alive. It is related that a little boy, one of those hard-faced, knotty-headed little fellows so plentiful in some of our by-streets, was seen to disappear head-first on last Friday, from the curbstone in front of the Chinese Museum. His mother, a podgy little body of a peculiar stamp, was looking on at the time, and lifted up her hands in mute despair at his sudden departure into such a region. A crowd was soon collected, gazing into the place where our little hero had disappeared, some proposing to get a long pole, and others shouting for grappling irons, when lo and behold! a slight movement was seen near the mud top on the other side of the street, then a waggling of a little gritty half brown and some other mixed colored head, and then the little fellow struggled up, looking over to his mother with an eel in the one hand and a mud turtle in the other, and with such a grin—oh! to have seen it. It is reported that the Mayor and Commissioner of Streets came up about the conclusion of the feat, and have become satisfied about the productiveness of New York streets. Proposals will soon be issued for the planting of eel-grass, and the full protection of our street fishing ponds.

Henry M. Paine, at Worcester, has received by the last steamer from England, his letters patent, which secure to him and his associate the benefits derived from his grand discovery by the people of Great Britain.

A rich vein of the phosphate of lime, about 6 feet wide at the surface, containing 90 per cent. of the phosphate, has just been discovered in New Jersey.

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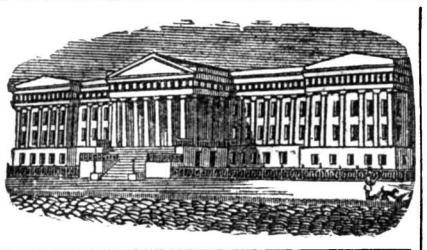

☞Reported expressly for the Scientific American, from the Patent Office Records. Patentees will find it for their interest to have their inventions illustrated in the Scientific American, as it has by far a larger circulation than any other journal of its class in America, and is the only source to which the public are accustomed to refer for the latest improvements. No charge is made except for the execution of the engravings, which belong to the patentee after publication.

LIST OF PATENT CLAIMS
Issued from the United States Patent Office.

FOR THE WEEK ENDING JANUARY 8, 1851.

To J. M. C. Armsby, of Worcester, Mass., for improvement in Candlesticks.

I claim casting the fly-wheel of the corn sheller solid with the feeding wheel, so as to bring it between the two bearings of said wheel, as herein before set forth.

[Some mistake of the Patent Office here.]

To David Baird, of New York, N. Y., for improvement in Spring Mattresses for invalids.

I claim, first, the employment of the end stays, having rule joints, allowing a limited range of motion and standing in a bracing position, substantially in the manner and for the purpose set forth.

Second, I claim the centre supports for rendering that part of the mattress permanent when desired.

To Thomas Bennet, of New York, N. Y., for improvement in Rotary Pumps.

I claim the arrangement of the curved water ways in the annular space above the fan or paddle, when substantially as described, in combination with the rotating fan or paddle wheel, substantially as described, and for the purpose specified.

And I also claim the self-adapting valves, substantially as described, and governing the apertures leading to the annular space above, in combination with the rotating fan or paddle wheels, and the curved water ways, substantially in the manner and for the purpose specified.

To E. B. Bigelow, of Clintonville, Mass., for improvement in Looms for weaving Tapestry Carpets with parti-colored warp.

I claim regulating the delivery of giving out of one or more warps or chains, by the separate tension of each, substantially as specified, in combination with a ground or controlling warp, which determines the length of the cloth warp, regulated by its tension and controlled by a break, or an equivalent thereof, when the lathe beats up, substantially as specified.

I also claim the employment of fingers, moving or vibrating independently of the lathe, substantially as and for the purpose specified.

To Francis Draper, of East Cambridge, Mass., for improvement in Fountain Inkstands.

I claim the arrangement for cutting off the communication between the cap and the main fountain of ink, by means of a layer of cork, or other similar substance, in the bottom of said fountain, and a cork, or other similar stopper, fitted on the bottom of the cup tube, or the lower end of said extended cup tube pressing against said layer, as set forth, in combination with the above specified arrangement, the inner cylinder in which said stopper moves as a piston, by which the air is more effectually excluded from the main fountain of ink.

To Wm. Maguire, of Cincinnati, Ohio, for improvement in machines for Jointing Staves.

I claim the arrangement, substantially as herein described, of a circular rest, having a sliding motion to and fro, in the plane of its axis, and having, around its perimeter, catches for the retention of the stave during the process of jointing, and rotating the distance from stave to stave, at every forward stroke, and held fast for the action of the rotating jointers upon the stave at every return stroke, the jointer and circular rest being so arranged as to impart, at the same time, to the stave edge, any given bevel and taper, according to the size and bilge of the cask.

To S. W. Marston, New York, N. Y., for improved Fly-tumbler Lock for fire-arms.

I claim the fly-tumbler arranged and combined with respect to the sear and the cock, in the manner and for the purposes set forth.

To Edward Neely, of Savannah, Mo., for improvement in Grass Harvesters.

I claim the manner herein described, of suspending the cutter ring from the wheel by means of straps, or other yielding material, for the purpose herein described.

I also claim the combination of the cutters, bevelled cutter ring, and straps, for the purpose of raising the cutter ring over any obstruction coming against the edge of the knife, as herein described.

I also claim the manner of arranging the guide board, standard, arm, and strap, secured as described, for the purpose of guiding the machine and allowing the parts to yield to a sudden stopping of the machine, or to irregularities in the ground, for the purpose and in the manner described.

To Jacob Neff, of Philadelphia, Pa., for improvement in Electro-Magnetic Engines.

I claim the insulated discs, in combination with the platina points, to act in concert with the magnetic wheels, in manner and form, and for the purposes described.

To Cunningham H. Pennington, of Rome, Ga., for improved arrangement of arches in bridge-trusses.—Ante-dated Dec. 9, 1850.

I claim the method herein described, of combining and arranging the several arches of a bridge, so as to make each arch alternately the upright and inverted arch, as it passes from one span of the bridge to another, and vice versa, when one set of arches have their remotest distance from each other, and their greatest sustaining point, directly over and under the points, when the other set of arches are changing from upright to inverted arches, or vice versa.

To James Shields, of New York, N. Y., and Samuel Pierce, of Troy, N. Y., for improvement in Coal Stoves.

We claim the method, substantially as herein described, of supplying currents of atmospheric air to the products of the combustion, at or near the thread leading from the fire chamber to the flues, in combination with what is known as Nott's fire-chamber, having the draught throat leading therefrom, between the top and the grate, the upper part of the fire pot may constitute a feeder or chamber of preparation, substantially in the manner and for the purpose specified.

To S. R. Simpson, of Springfield, Ohio, for improved Parallel Vise.

I claim the attaching the lower end of the moving jaw of the vise to a block that is attached to and moves with the end of the screw, in the manner and for the purpose described.

To A. L. Simpson, of Durham, N. H., for improvement in Ox Yokes.

I claim arranging in the beam of the yoke two draft staples, some six inches apart, in lieu of one at the centre and the combination or use therewith, of a branch chain of proper length, connected to the main draft chain, at a proper distance from the beam, and the adjustable hook, for modifying the length of the branch chain, as specified and for the purpose set forth.

To James Warner, of Springfield, Mass., for improved means for revolving the breeches of repeating fire-arms.

I claim the cranked shaft operated by the tumbler, having its axis of vibration in the line, or nearly so, with the axis of rotation of the cylinder, substantially in the manner set forth.

R. G. Westacott, of Worcester, Mass., (assignor to R. G. Westacott, E. L. & N. K. Lombard, of Boston, Mass., or elsewhere) for improvement in the manufacture of Caviar.

I claim salting the roe or ova, whereby extraneous matters are separated, the same consisting in suffering it to stand in pickle, or a strong saline solution, or until it undergoes a process by which ova, and such extraneous matters separate from one anothor, the former rising to the surface of the pickle, while the latter falls to the bottom of it.

And I also claim the combination of the male sturgeon oil, as above mentioned, with the salted ova, for the purpose of improving the manufacture thereof, as specified.

For the Scientific American.

Mechanical Principles.--No. 3.

ACTION AND RE-ACTION.—Perpetual motion has always been a favorite subject with tyros in mechanical principles, and the subject has lately been renewed in the shape of Mr. Paine's gas light. There is no connection, however, between strictly mechanical action and a combination of mechanical and chemical action: those who make such comparisons do not understand the subject; for, viewed in the light in which Mr. Paine's light has been called by a gentleman "perpetual motion," the steam engine, as it now stands, is just as much so. Why? because one man can dig as much coal in one day as will supply an engine of 100 horse power for the same time. The steam engine, therefore, gives out a far greater mechanical result than the labor required to produce the elements and feed them to the engine to call forth its powers. Strictly speaking, there can be no such thing as perpetual mechanical motion. Why? because "*action* and re-action are equal and opposed to one another." *Inertia* is simply a principle of matter, or quality in all bodies, by which they can neither generate nor destroy motion, it therefore follows that when bodies act upon one another, in any way whatever, the total quantity of motion, in a given direction, after the action takes place, must be the same as before it; for, if it were otherwise, some motion would be produced by the action of the bodies, which would contradict the principle that they are inert. Mechanical action does not mean any inherent active principle in bodies, but the effect of motion in bodies. If two balls of glass were projected opposite to one another in a tube, both balls being 12 pounds, with a velocity of 100 feet per second, the momentum of each would be 12×100=1200, therefore the momentum, at the point of contact, where they meet, would be 2,400. This would shatter them both to pieces. If one, in motion, struck the other when stationary, the ball, in all likelihood, would not be broken, for the momentum exerted would be only one half. The second ball, therefore, if it could be carried along with the moving one, would be reduced in velocity, but the amount of moving matter would be doubled, consequently the quantity of motion (momentum) would be the same, thus proving that action and re-action are equal. Momentum is the quantity of matter multiplied into its velocity. A ball of 12 pounds weight moving at a velocity of 10,000 feet per second has double the quantity of motion (momentum) that a ball of the same weight has, when moving with a velocity of only 5,000 feet per second. A body of 5 pounds weight, moving at a velocity of 10,000 feet per second (5×10,000=50,000) has more momentum, or force, than 50 pounds moving only at the rate of 500 feet per second, (50×500=25,000), but 50 lbs., moving at the rate of 1,000 feet per second, has as much momentum as 5 pounds moving at the rate of 10,000 feet per second. A piece of tin on a mandril, if made to revolve at a great velocity, will cut through iron, because it has so much of a superior momentum as to counterbalance its defect in hardness, as compared with the iron. A round ball, without a cutting edge upon it, when shot from a cannon, will pierce through iron plates, with the greatest ease. The steam pressure on a piston, if the area is 100 inches, and the pressure 100 lbs on the square inch, is the same as the weight of a body amounting to 100×1000=100,000 pounds, and the velocity of the piston at 300 feet per second, will give an amount of momentum equal to 10,000×300=3,000,000, lifted one foot per second, or a horse power of 5,454 6-11, for a horse power, is a unit of 33,000 lifted one foot high per minute. If we say 300 feet per minute, we have a horse power 60 times less, or 90 10-11 horse power. When the velocity in feet and the weight are multiplied into one another, the resultant may be called the whole weight moved one foot in the time specified.

MACLAURIN.

MESSRS. EDITORS—In last week's Scientific American it was stated that "a ball of lead, 2 inches diameter, will fall faster than a ball of lead one inch." This I think, is incorrect and contradictory to the known laws of gravitation. As the earth's attraction acts separately and equally on every particle of matter, without regard to the nature or species of the body, it follows that all bodies must be moved with the same velocity. If two equal particles of matter be placed at a certain distance above the surface of the earth, they will fall in parallel lines and with exactly the same speed, because the earth attracts them equally,—in the same manner a thousand particles would fall with equal velocities. Now, these circumstances will in no wise be changed if those 1000 particles, instead of existing separately, be aggregated into two solid masses, one consisting of 990 particles, and the other of 10. We shall thus have a heavy body and a light one, and, according to our reasoning, they must fall to the earth with the same speed.

W. A. BLACK.

Philadelphia, Jan. 6, 1851.

For the Scientific American.

Belts and Pulleys.

In Vol. 6, page 53, of the Scientific American, is an inquiry in regard to the use of thick and thin belts to drive machinery. I have found by experiment, that if equal weights were suspended upon opposite sides of the same pulley, by straps of equal weight, but of unequal thickness, the weight suspended by the thick strap would preponderate, and which seems evident, from the consideration that the thick belt carries the weight further from the centre of motion—the inside of the belt, next to the pulley, not being strained as much by the weight as the outside, in consequence of the bending of the strap, thereby increasing the strain on the outside, while it is proportionably diminished on the inside, and, in effect, increasing the size of the pulley by so much of the thickness of the strap as is not strained. It therefore becomes obvious that, as the pulley is enlarged by this means, a less number of revolutions will be produced by a thick belt than by a thin one, provided, however, that both belts have the same velocity; but, as it is evident that if the driven pulley is enlarged, the driving pulley must also be enlarged by the same means, consequently the velocity of the belt alone will be increased, while that of the two pulleys remains the same.

E. M. CHAFFEE.

New Haven, Dec. 23, 1850.

Coal for Gas.

The London "Journal of Gas Lighting," for last November, has an elaborate article on the comparative lighting powers of different kinds of coal, and the respective values of their residuary products. From this article is compiled the following table. Five cubic feet per hour of the gas produced by each description of coal, it must be understood, gives a light equal to the number of candles stated in the first column of figures. The second column shows to what proportion of the cost of the coal the residuary products are equivalent.

	CANDLES.	PER CENT.
Scotch Cannel,	20 to 30	5 to 20
Newcastle Cannel,	22 to 25	30
Wigan Cannel,	20 to 23	20 to 25
Newcastle Coking Coal,	11 to 15	50 to 55
Derbyshire do.	12 to 15	40 to 45
Yorkshire do.	10 to 13	45 to 50
Lancashire do.	10 to 12	45 to 50
Cumberland do.	10 to 12	35 to 40
Gloucestershire do.	10 to 12	30 to 35
Cheshire do.	10 to 12	20 to 25
Somersetshire do.	9 to 10	40 to 45
Staffordshire do.	9 to 10	35 to 40
South Wales and Dean Forest do.	8 to 9	45 to 50

This table may teach the public how fallacious it is to suppose that gas can be sold at the same price, with the same profit, all over the world. The lighting power of the coal—the value of the residuary products—the extent of consumption—must all be taken into consideration. We must also bear in mind that the residuary products of the same coal vary in value according to locality.

The Philadelphians have given a grand fete to Capt. Mathews of the "City of Glasgow."

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TO CORRESPONDENTS.

"T. H., of N. Y."—The reception of your papers, model, and fees, has been acknowledged by the Patent Office, and you may expect to hear the decision in a few days. If you have got a machine for moulding candles by which four men can prepare, complete for boxing, 240 dozen per hour, you have got something that is new and patentable, without doubt.

"G. A. G., of Pa."—The Alcott lathe is not adapted for turning so small a matter as rake teeth.

"H. D. D., of Mass."—The information you solicit we are unable to give—we are unacquainted with either invention.

"A. L., of R. I."—Mr. Stephen Frink, of Newark, N. J., manufactures "bone mills" of any capacity. By addressing a line to Mr. Frink, as above, the information you solicit may be obtained.

"T. V. T., of Pa."—Your letter, enclosing $2, was duly received, and credited on account of subscription. If the information you require would not take more than a week's time to obtain, we would try to get it for you, but the quantity of questions you have the audacity to ask, for a new subscriber, does entirely nonplus us.

"J. C. S., of N. Y."—The arrangement of your carriage body and combination of the springs, is believed to be new and patentable; it is a novel arrangement, and would operate well, we think, on light wagons.

"G. H. R., of Tenn."—We could not procure for you a single number of Arnott's Architecture, so we credit the 31 cts. on your subscription to the Scientific American. The work of Arnott's is complete now, and single numbers can no longer be obtained.

"I. A., of Pa."—We do not believe that you would be likely to get a patent for the improvement. It is very difficult to get one on tools of that kind—we know this from expeperience.

"J. Y. M., of S. C."—Mifflin is ready; its cost is $1; Daniels & Smith, Philadelphia, are the publishers. Gutta percha will answer for the water pipes in a stream subject to tide water.

"J. F. W., of Mass."—There is a machine for pegging boots in Lynn, Mass. We have seen one for the heels. You could not get a patent.

"J. W. H., of Mass."—The price of Bourne's Catechism is 75 cents.

"A. S., of St. Louis."—We will be able to get a list of the articles at the Fair, but it will be quite a large book and very expensive. We could not tell you whether you could get a patent for the improvement in soap or not; you can only patent the articles to produce the effect, and we don't know what they are. To produce such a good effect as that you speak of, we should judge that you had something new and patentable. We say the same about the tallow. Each patent would cost you at least $50.

"H. W. H., of N. H."—If it be possible we may, at some future time, accede to your request about the figures for teaching drawing. We will send you a small copy of the book you speak of, but how are we send it. We do not sell the work any more.

"W. C. C., of ——."—Your method of hanging gates is different from the one referred to.

"X. X., of Md."—Your improvement is, without doubt, patentable, at least we know of nothing like it; the first step necessary is to construct a model and forward it to this office; you will then be advised as to the expense of obtaining Letters Patent; the model should be made as compact as possible.

"J. S., of Ind."—The numbers of volume 4 you desire, cannot be furnished.

"H. B. of O."—The Alcott Lathe is just the machine you need to facilitate your business.

"J. S. H., of Mass."—We cannot supply you with the lenses; you can obtain them from John Roach, optician, 80 Nassau street. The information about the school we publish in this number.

"J. A. R., of N. H."—Your lathe was sent on the 2nd inst., as directed.

"E. F. D., of Ohio."—We shipped your lathe on the 2nd, by the Pittsburg Transportation Co., care of O'Conner, Atkins & Co., Cincinnati—receipt sent by mail.

Money received on account of Patent Office business, since Jan. 7, 1851:—

J. W., of N. Y., $75; J. C. K., of N. Y., $8; J. R. T., of Ohio, $55; E. G., of Mass., $25, and W. & P., of Pa., $30.

The specifications and drawings belonging to parties of the following initials, have been forwarded to the Patent Office since last acknowledged in the Scientific American, and the respective fees paid:—

H. N. DeG., of N. Y.; U. P. of Conn.; G. D., of O.; S. N. M., of N. Y.; C. B. H., of N. Y.; L. A. S., of Pa.; L. I. W., of R. I.; J.W. O., of Ohio; E. G., of N. Y.; W. M. S., of N. Y.

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Those desiring Volume 5 of the Scientific American, are informed that we are able to furnish a few complete volumes, (bound,) at $2,75 each. Also, we can send by mail sets complete, (unbound,) for $2. We would also say, that whenever our friends order numbers they have missed—we shall always send them if we have them on hand. We make this statement to save much time and trouble, to which we are subjected in replying, when the numbers called for cannot be supplied.

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Patent Office.

128 FULTON ST.

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Arrangements have been made with Messrs. Barlow, Payne & Parken, Patent Attornies, in London, for procuring Letters Patent in Great Britain and France, with great facility and dispatch.

MUNN & CO.,
128 Fultonstreet, New York.

PATENT RIGHTS FOR SALE—Goodman's Improvement for Turning Irregular Forms.—This machine has been patented about two years, and is well adapted to turning spokes, lasts, and handles; it differs from all other machines in having a combination of mandrels connected by gears, each of which holds one end of a stick to be turned, the other end being fastened by a common centre; over these hangs a cylinder, with cutters of sufficient length to come in contact with all the pieces to be turned, it being at right angles with them. Machines are now in operation which turn 4 spokes at a time, which will turn 50 an hour, leaving them better to finish than any other machine in use. For particulars, address DANIEL STONE, Dana, Mass. 18 5*

1851 TO 1856.—WOODWORTH'S PATENT PLANING MACHINE.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns, continues to be dressed with Woodworth's Patent Machines, which may be seen in constant operation in the steam planing mills at Boston, Philadelphia, New York, Jersey City, Williamsburgh, Brooklyn, Albany, Troy, Utica, Rome, Syracuse, Geneva, Rochester, Lockport, Buffalo, Elmira, Pittsburg, Jamestown, Gibson, Binghampton, Ithaca, &c. &c. The price of a complete machine is from $100 to $1,000—according to size, capacity, and quality. Persons holding licenses from the subscriber are protected by him against infringements on their rights. For rights to use these machines in the Counties of Queens, Richmond, Suffolk, and Westchester, and the other unoccupied counties and towns of New York, and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 18 4*

WILLIAM W. HUBBELL—Attorney and Counsellor at Law, and Solicitor in Equity, Philadelphia, Penn.

FOR SALE—A small Steam Engine and Tubular Boiler, of one horse power, in complete order. Apply at No. 12 Spruce st., 3rd story. 18 3*

STRAW CUTTER FOR SALE.—We have on hand one of Macomber's Improved Straw Cutters, patented Nov. 5, 1850, illustrated in No. 50, Vol. 5, Sci. Am. Price $10. Address MUNN & CO.

HUTCHINSON'S PATENT STAVE MACHINE.—C. B. HUTCHINSON & CO., Waterloo, N. Y., offer for sale town, county and State rights, or single machines, with right to use the same. This machine was illustrated in No. 2, Vol. 5, Sci. Am.; it will cut from 1,500 to 2,000 perfect staves per hour. We manufacture machines of different sizes, for keg, firkin, barrel and hogshead staves; also, heading shingle, and listing and jointing machines. These machines may be seen in operation at St. Louis, Mo.; Chicago, Ill.; Savannah, Ga.; Madison, Ia.; Ithaca, N. Y.; Waterloo, N. Y.; Bytown, C. W. Letters directed to us, post-paid, will receive prompt attention. 15 3m*

LEONARD'S MACHINERY DEPOT, 116 Pearl st., N. Y.—The subscriber has removed from 66 Beaver st. to the large store, 116 Pearl st., ayd is now prepared to offer a great variety of Machinists' Tools, viz., engines and hand lathes, iron planing and vertical drilling machines, cutting engines, slotting machines, universal chucks, &c. Carpenters' Tools—mortising and tennoning machines, wood planing machines, &c. Cotton Gins, hand and power, Carver Washburn & Co.'s Patent. Steam Engines and Boilers, from 5 to 100 horse power. Mill Gearing, wrought iron shafting and castings made to order. Particular attention paid to the packing, shipping, and insurance, when requested, of all machinery ordered through me. P. A. LEONARD.
15 2m

TO IRON FOUNDERS, &c.—Fine ground and bolted Foundry Facing, viz.: Sea Coal, Charcoal, Lehigh, Soapstone, and Black Lead. Fire Clay, Fire Sand, Kaoline, and Fire Brick; also Iron and Brass Founder's superior Moulding Sand, in barrels, or otherwise, for sale by G. O. ROBERTSON, New York. City Office, 4 Liberty Place, Liberty street, near the Post Office. 13 5*

WANTED—By a Southern foundry and machine shop, in a healthy and desirable location, a man who is practically acquainted with, and fully experienced in the inside management and conduct of a foundry and machine shop. The establishment is large and requires for the office a man fully qualified as a designer and draughtsman, and thoroughly acquainted with, and experienced in engine and mill works of all descriptions. To a party who can furnish the very best testimonials from undoubted sources, of the highest qualifications, and who may render satisfaction, permanent employment will be given, none other need apply. A bond of five thousand dollars with approved security for faithful and competent discharge of duty will be required. The salary will be from $2000 to $3000, dependent upon the reputation, general experience, and character of the party. All communications will be regarded, strictly confidential. Address, with real name, post paid, box 664, New York City. 17 5*

WORLD'S FAIR, LONDON, in 1851—ANDREW P. HOW, Civil Engineer and Machinist, 35 Mark Lane, London, England. Mr. How is a native of the United States, in the above named business in the city of London. He offers his services to those of his countrymen who may have any kind of steam or other machinery to be exhibited at the Great Fair. He will, if required, receive it on arrival, and do all that may be necessary towards its erection, &c. References in New York—Thos. Sewell, 701 Broadway; Joseph Barton, 516 Grand st. 16 8*

MACHINES FOR CUTTING SHINGLES. The extraordinary success of Wood's Patent Shingle Machine, under every circumstance where it has been tried, fully establishes its superiority over any other machine for the purpose ever yet offered to the public. It received the first premium at the last Fair of the American Institute—where its operation was witnessed by hundreds. A few State rights remain unsold. Patented January 8th, 1850,—13 years more to run. Terms made easy to the purchaser. Address, (post-paid) JAMES D. JOHNSON, Redding Ridge, Conn., or Wm. WOOD, Westport, Conn.. All letters will be promptly attended to. 10tf

BARNUM'S PATENT PLANING MACHINE.—These machines, while they possess equal facilities with any other, for planing coarse lumber for flooring, &c., removes all the objections urged against machine planing, for ship and steamboat building, or fine ceiling, &c., by finishing the material with the grain, fully equal to hand planing, leaving no indentations on the surface of the board (as in all machines using pressure roll-ers in planing, by the chips and knots collected passing between the planed surface and weighted feed rollers, thereby destroying fine work, designed for painting, &c.) as there is no appliance whatever on the planed surface. Contracts may now be made for their construction or use, or for the formation of a joint stock company or companies, in any part of the U. S., to successfully prosecute the business by applying to DANIEL BARNUM, Snowden's Wharf, Philadelphia, where the machines may be seen in constant operation. 14 6*

DICK'S GREAT POWER PRESS.—The public are hereby informed that the Matteawan Company, having entered into an arrangement with the Patentee for the manufacture of the so-called Dick's Anti-Friction Press, are now prepared to execute orders for the following, to which this power is applicable, viz.—Boiler Punches, Boiler Plate Shears, Saw Gummers, Rail Straighteners, Copying and Sealing Presses, Book and Paper Presses, Embossing Presses, Presses for Baling Cotton and Woollen Goods—Cotton, Hay, Tobacco, and Cider Presses; Flaxseed, Lard, and Sperm Oil Presses; Stump Extractors, &c. &c. The convenience and celerity with which this machine can be operated, is such that on an average, not more than one-fourth the time will be required to do the same work with the same force required by any other machine.

WILLIAM B. LEONARD, Agent,
13tf No. 66 Beaver st., New York City.

WATER POWER FOR SALE OR TO LEASE—55 miles from New York, and 3 miles from the Harlem R. R. Depot at Croton Falls. There is a never-failing stream of water, with a fall of 200 feet in one-third of a mile, and about 150 horse power, without any cost of damming or danger from floods. It is a fine situation for a series of small manufactories and mechanic employments requiring motive power. There are on the premises, consisting of 11 acres of land, a grist and plaster mill, with three runs of stone, and a dwelling house. The country is healthy, fruitful, and picturesque. Enquire of T. R. LEE, Croton Falls. 15 6*

THE SUBSCRIBER is now finishing four 14 horse engines, with boiler and apparatus all complete—price $1200 each. Several 6 horse engines extremely low; also, several of smaller capacity, complete; also, several power plainers, now finishing.—Galvanized chain for water elevators, and all fixtures—price low—wholesale and retail. Orders, post-paid, will receive prompt attention. AARON KILBORN.
No. 4 Howard st., New Haven, Conn. 18 10*

GURLEY'S IMPROVED SAW GUMMERS—for gumming out and sharpening the teeth of saws can be had on application to G. A. KIRTLAND, 205 South st., N. Y. 10tf

SCRANTON & PARSHLEY,—New Haven, Conn., will have finished by the 15th of December, 12 Engine Lathes of 8, 10 and 12 feet beds, and weigh 1500, 1650, and 1800 lbs; price $200, $220 and $240. These Lathes are from a new set of patterns, and are greatly improved from their former small size lathes; they swing 21 inches, and have back and screw gearing, centre rest, follow rest, drill, chuck and overhead reversing pulleys, all hung in a cast iron frame, ready for use. On and after the first of Dec., by addressing as above (post paid) cuts can be had of these, with index card, showing the different pitch threads that these lathes will cut.

Two of the power planers heretofore advertised in this paper, are now ready to ship to the first order; they weigh from 4500 to 4600 lbs., when finished. 9tf

A CARD.—The undersigned begs leave to draw the attention of architects, engineers, machinists, opticians, watchmakers, jewellers, and manufacturers of all kinds of instruments, to his new and extensive assortment of fine English (Stubs) and Swiss Files and Tools, also his imported and own manufactured Mathematical Drawing Instruments of Swiss and English style, which he offers at very reasonable prices. Orders for any kind of instruments will be promptly executed by F. A. SIBENMANN, Importer of Watchmakers' and Jewellers' Files and Tools, and manufacturer of Mathematical Instruments, 154 Fulton street. 1 6m*

TO PAINTERS AND OTHERS.—American Anatomic Drier, Electro Chemical graining colors, Electro Negative gold size, and Chemical Oil Stove Polish. The Drier, improves in quality, by age—is adapted to all kinds of paints, and also to Printers' inks and colors. The above articles are compounded upon known chemical laws, and are submitted to the public without further comment. Manufactured and sold wholesale and retail at 114 John st., New York, and Flushing, L. I., N. Y., by

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BAILEY'S SELF-CENTERING LATHE, for turning Broom and other handles, swelled work, chair spindles, &c.; warranted to turn out twice the work of any other lathe known—doing in a first rate manner 2000 broom handles and 4000 chair spindles per day, and other work in proportion. These lathes are simple in construction, not liable to get out of repair, and will do enough more than other lathes, in three months' use, to pay their cost. One of them may be seen at the office of Munn & Co., New York. Price of Lathe for turning broom and hoe handles, rake stales, scythe snaths, windsor and cottage chair legs and pillars, $100, with one set of tools; $125 with two sets. Lathe for turning chair spindles, whip stocks, gun rods, &c., complete, $75. Orders, post-paid, may be forwarded to L. A. SPALDING, Lockport, N. Y. 93m

IMPORTANT NOTICE TO CONFECTIONARY MAKERS—Whereas, a patent was granted to the undersigned, Oct. 8th, 1850, for an improvement in the manufacture of Comfits, and from certain knowledge which he has received, he believes that parties are using it without his consent. Vigorous measures are now being taken to ascertain who the unprincipled parties are, in order that they may be dealt with according to law. This notice is to warn all not to infringe the patent, as it is not the intention of the patentee to dispose of rights. Parties using it will have no authority. W. H. HOLT, Patentee.
Hartford, Conn., Nov. 25, 1850. 11 8*

FOREIGN PATENTS.—PATENTS procured in GREAT BRITAIN and her colonies, also France Belgium, Holland, &c., &c., with certainty and dispatch through special and responsible agents appointed, by, and connected only with this establishment.—Pamphlets containing a synopsis of Foreign Patent laws, and information can be had gratis on application

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PATENT RIGHTS FOT SALE.—The inventor of the patent "Cut-Off," illustrated in No. 14, Scientific American, desires to effect sales of rights—town, county and State rights will be sold on reasonable terms. Address G. B. MILNER, Houston, Texas, post-paid. 15 4*

UNITED PATENT OFFICE IN PARIS AND LONDON.—GARDISSAL & CO., 9 Arthur st., west, city, London; Paris, 29 Boulevard St. Martin.—Procuration of Patents for England, Ireland, Scotland, France, and all countries; and transactions of all business relating to patents, (sale and licenses,) specifications, oppositions, &c. "The Invention," monthly journal, $1 a-year. 15 4m*

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Scientific Museum.

Properties of Ether.

Water can dissolve only a small quantity of ether, but alcohol and ether combine in every proportion. Ether is very inflammable, and burns with a much more copious and richer flame than alcohol; the products of its combustion are water and carbonic acid. A few drops put into a detonating bottle full of oxygen gas, which is immediately corked, speedily diffuse themselves through the gas, and form an inflammable mixture that detonates violently on bringing a lighted match to the mouth of the bottle. This is an experiment that should be performed with a very small and strong bottle, as detonating bottles that have not been injured by any other explosive mixtures are frequently broken by this.

From the rapidity with which ether evaporates at the natural temperatures, it is often used to produce an intense degree of cold. If a small quantity be poured into a jar, which is immediately covered with a tray, it speedily evaporates, and on applying a lighted candle to the mouth of the jar it is ound to be full of an inflammable vapor.

If a larger quantity of ether be put into an open jar, and a coil of thin platinum wire, heated to redness in a spirit-lamp, be suspended over it at a particular distance, which is easily found on trying the experiment, instead of becoming cold it remains red hot till the whole of the ether is consumed.

In all experiments with nitric acid and alcohol, great care must be taken not to mix a large quantity of acid with the alcohol at once, as the gaseous products that are immediately produced are apt to throw out the whole of the mixture with explosive violence. The best method of preparing hyponitrous ether is by mixing equal weights of alcohol and the strong fuming acid, prepared by distillation from 2 parts by weight of sulphuric acid with 3 of nitre. The acid re-acts on the alcohol, and in a day or two it is converted into ether, which floats on the top of the remaining liquid, and may be easily removed by a small syphon.

Two or three ounces of alcohol are put into a bottle, and small quantities of the acid are poured into it at a time by a funnel with a long stem, which passes to the bottom of the bottle, mixing them thoroughly after each addition of acid, and then placing the bottle in cold water to prevent any violent re-action taking place. A drachm or two of the acid may be added every quarter of an hour in this manner till it is all mixed with the alcohol. The bottle should be provided with a conical stopple to allow the gas that accumulates to be discharged.

The Dublin College directs the alcohol to be mixed with sulphuric acid in a flask, and the mixture to be poured over bruised nitre in a retort. The proportions they recommend are nearly 865 of nitre, 1345 of sulphuric acid, and 725 of alcohol, by weight. The retort must be placed in a basin of cold water to prevent the action becoming too violent, and it should not be filled more than a third full of nitre.

Hyponitrous ether contains a little acid as it is procured at first, which may be removod by mixing it with a little potassa or lime, and then distilling it. It has a very pale lemon-color yellow, a pleasant smell similar to that of apples, and a strong penetrating taste. It is heavier and more volatile than sulphuric ether, burns with a lambient flame, and soon becomes acid on being kept. When it is purified by distillation, the operation should always be carried on with a very gentle heat, as it is decomposed when distillcd quickly at a higher temperature.

Aerial Navigation.

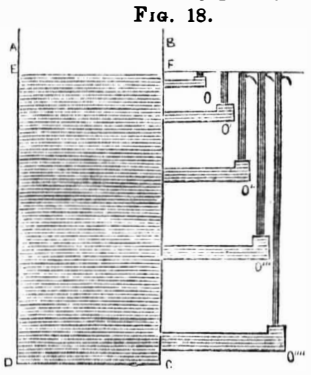
Mr. John Wise, of Lancaster, Pa., well known through the Sci. Am., has presented a memorial to Congress, asking an appropriation of some twenty thousand dollars, to enable him to construct a balloon, 100 feet in diameter, which shall have the power of elevating 16 tons. He states that he has demonstrated to his own satisfaction, and is prepared to demonstrate to the world, that balloons may be made useful and practicable for the transmission of mails and the transportation of passengers. That they can be made even more servicable in war than in peace. He will elevate a balloon at any place designated, above the reach of gun-shot, from whence he can discharge missiles of such a destructive character, as to annihilate any fleet, fort, or army which may be beneath it.

For the Scientific American.

Hydraulics.

(Continued from page 136.)

Fig. 18.



From the theorem in fig. 17, last week, it is plain that the principle just expressed is true, when the depth of the orifice below the surface is indefinitely small; hence if true in this case, it must, according to what has been already explained, be also true in every other.

It follows, as a necessary consequence, that if the orifices from which the liquid is discharged be presented upwards, the jets of liquid which would escape from them would rise to a height equal to the level of the liquid in the vessel. Thus, in fig. 18, if E F be the surface of the liquid, and O, O', O'', O''', be four orifices at different depths, all opening directly upwards, the liquid will spout from each of them with the velocity which a body would acquire in falling from the level of the surface E F to the orifices, respectively, and consequently the liquid must rise to the same height before it loses the velocity with which it was discharged. Hence the jets severally issuing from the orifices will rise to the height F G.

These important theorems must, however, be submitted to considerable modifications before they can be considered as applicable in practice. In the preceding investigation, we have considered the orifice to be indefinitely small, so that every point of it may be regarded as at the same depth below the surface; we have also considered that the fluid in escaping from the orifice is subjected to no resistance from friction or other causes; and also that in its ascent in jets it is free from atmospheric resistance. In practice, however, all these causes produce very sensible effects; and the consequence is, that the actual phenomena

Fig. 19.

vary very considerably from the results of theory. The velocity of the efflux is, from the moment the orifice is opened, diminished by the friction of the liquid against the sides of the pipe or opening through which it passes. After it escapes, the resistance of the air produces a sensible effect upon the movement of the fluid particles. This resistance increases even more rapidly than the velocity, so that the jets which escape from the lower orifices are still more resisted in proportion than those from the higher, and consequently they do not rise even near the level of the fluid in the vessel.

As the liquid is gradually discharged from the orifice, the contents of the vessel descend, the various particles falling in lines nearly perpendicular; but when they approach near the orifice from which they are to escape, they begin to change their direction, and to tend towards the orifice, so that their motion is in lines, converging towards the opening, and meeting at a point outside it. These effects will be produced whether the opening be in the bottom or in the side of the vessel. They may be rendered visible by using a glass vessel filled with water, in which filings or small fragments of solid substances are suspended, and which are carried along by the motion of the currents.

If a vessel be allowed to empty itself by an orifice in the bottom, the surface of the liquid will gradually descend, maintaining its horizontal position; but, when it comes within a small distance, about half an inch, of the bottom, a slight depression or hollow will be observed in that part of the surface which is immediately over the orifice. This will increase until it assume the shape of a cone or funnel, the centre or lowest point of which will be in the orifice, and the liquid will be observed flowing in lines directed to this centre.

This effect will be better understood by referring to fig. 19, where the direction of the currents and the contracted vein are exhibited.

As the particles of liquid in approaching the orifice move in directions converging to a point outside it, it is plain that the column of fluid which escapes from the vessel will be narrower or more contracted at the point towards which the motion of the liquid converges than it is either before it arrives at that point or after it has passed it. This contraction of the jet produced by the peculiar directions which the motions of the fluid particles take, was first noticed by Newton, who gave it the name of the *vena contracta* or the *contracted vein* of fluid. The distance from the orifice at which the greatest contraction of the jet takes place depends, with certain limitations, on the magnitude of the orifice. If the orifice be circular and small, its distance is equal to half the diameter of the orifice, and the magnitude of the jet at its most contracted point bears to the magnitude of the orifice, according to Newton, the proportion of 1,000 to 1,414, and according to Bossuet, the proportion of 1,000 to 1,600.

It will be evident, upon very slight consideration, that if the liquid be suffered to escape by a cylindrical tube, the contraction of the vein will be greatly diminished. In this case the proportion of the magnitude of the most contracted part to that of the bore of the tube is 1,000 to 1,200.

As the same quantity of fluid which passes in any given time through the orifice must pass in the same time through the narrower space of the contracted vein, it follows that it must past through this place with a proportionally greater velocity. Its velocity, therefore, at the point called the contracted vein, is greater than at the orifice in the proportion 1,414 to 1,000, according to Newton's calculation.

The Flax Cotton Again.

As we have stated on two former occasions, that we did not believe that the flax cotton, about which so much has been said, could be made to supersede cotton, so at last it has come out just as we predicted. A late number of the "Manchester Guardian" states that it has been tried at that place, and in Rochdale, on fine cotton machinery, and it proved an entire failure. "For all finer purposes, it is totally unfitted by its harshnes, to be spun on fine cotton machinery." We stated that from what we knew of the difficulties of preparing it, we could not see how it could compete with cotton. It seems that it has another difficulty to surmount, viz., the one of harshness mentioned, so as we have already asserted, it turns out to be an attempt to frighten the cotton growers.

Annual Loss of Life and Property on the Lakes.

The Buffalo Commercial Advertiser publishes from reliable sources, a detailed statement of the disasters on the lakes during the past season, from which it appears that they involve the loss of three hundred and ninety-five lives, and $558,926. Ten steamboats, twenty-one sail craft, and one propeller have gone out of existence entirely. Of the lives lost, 250 resulted from the burning of the steamer Griffith, 65 from the explosion of the Anthony Wayne, and 38 from the collision of the steamer Commerce.

LITERARY NOTICES.

We noticed, a few week's since, the intended publication of a new literary journal, called the "Western World." The second number is already issued, and contains an interesting variety of entertaining matter, adapted to family reading, and although furnished one year for the low sum of 50 cents, it compares not unfavorably with its cotemporaries at four times the price. It is edited and published by our valued friend, J. F. Bridge, and we wish him the largest success in his new enterprize. A well conducted newspaper is the source from which we derive a vast amount of intelligence, and a corresponding amount of good accrues to the community. The poorest in our land can offer no reasonable excuse for not receiving the weekly visits of one or more papers: certainly, at the low price for which 52 numbers of the Western World are furnished, no reasonable excuse exists why every family (who deem even a dollar paper too high) should not become its permanent patrons and readers. A weekly newspaper, of good size, furnished for 50 cents, is quite a novelty in this country, and must require a large subscription list to make it remunerative. The response to the entertainment to which the public are invited by Mr. Bridge, has been, thus far, gratifying; and we bespeak for him an immense subscription list of cash paying readers.

Harper's New Monthly Magazine, for January, contains an interesting variety of choice literature, besides several illustrations, some of which the ladies will be pleased with, as they relate to fashion—a very interesting subject always. As our taste does not happen to run that way, we plead ignorance as to the merits of this department. The general character of this Magazine is superlatively good, and without doubt it circulates more largely than any other now published. Subscription price $3.

We are indebted to Messrs. Dewitt & Davenport, Tribune Buildings, for a copy of the Experiences of Richard Taylor, Esq.; also a copy of Marston of Dunoran, published at the office of Littell & Co., Boston. They are both highly interesting tales, and will repay a perusal. We speak from experience, having read both.

Geology and Resources of California—This is the title of a very excellent book, with maps, &c., and contains the reports of Persifer F. Smith, and of Lieuts Talbot, Ord, Derby, and Williamson, relating to their explorations in California and Oregon, and their examinations for railroad routes to the eastward from those countries. It is published by Minnifie & Co., Baltimore.

Duggan's Stone, Iron, and Wood Bridges Appendix.—Four parts of the Appendix of Mr. Duggan's excellent work is now completed, the other primary parts having already been published. The Appendix is very valuable; it enters into the merits of Foundations, Coffer Dams, Concrete, &c., and gives some fine specimens of Bridge Architecture.—This is a work which no Civil Engineer and Architect should be without. All the back numbers can be supplied at any moment, by addressing Geo. Duggan, N. Y.

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